NEW ZEALAND Coal

Vol.19: No.1: SUMMER, 1974.

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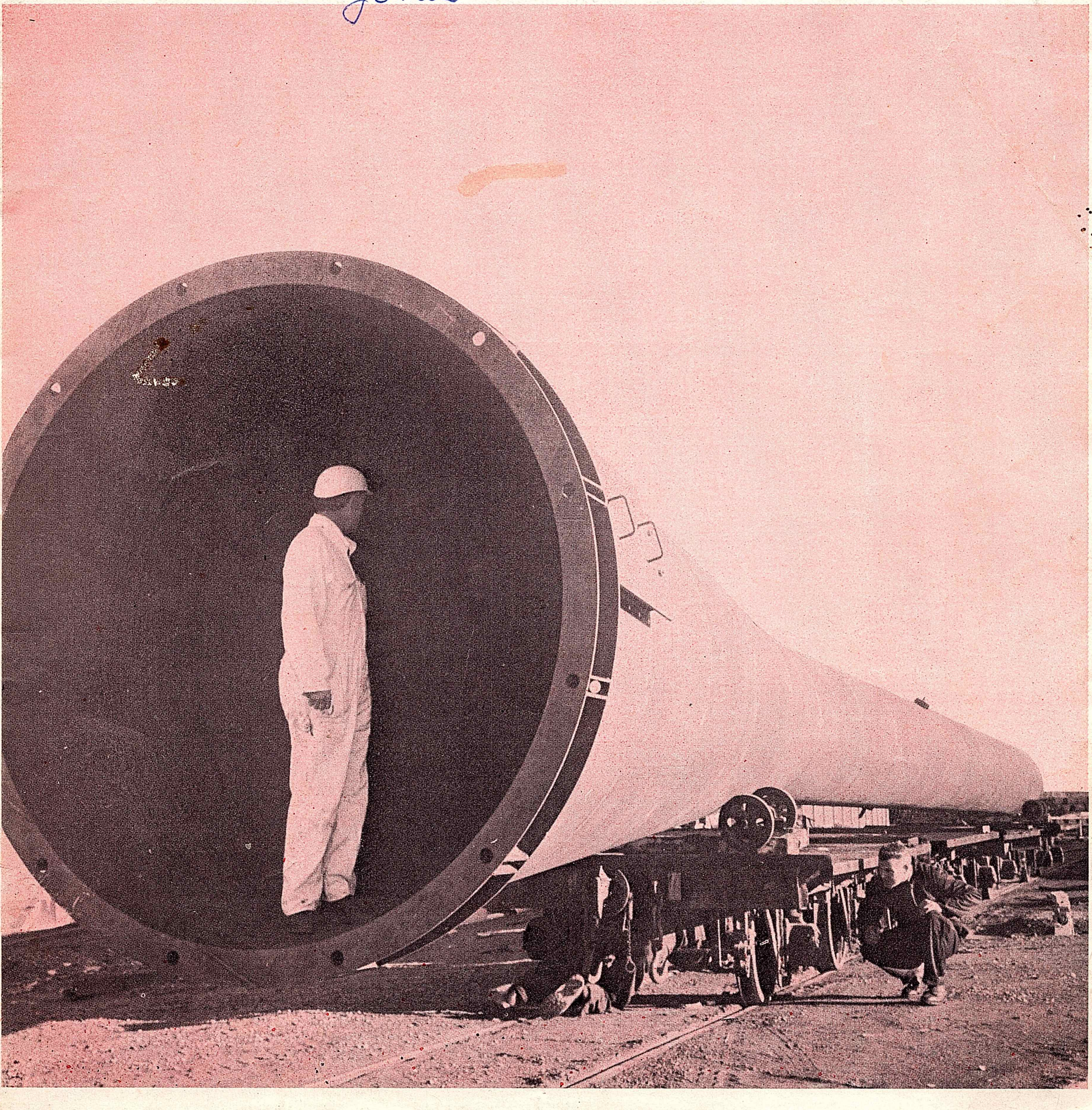

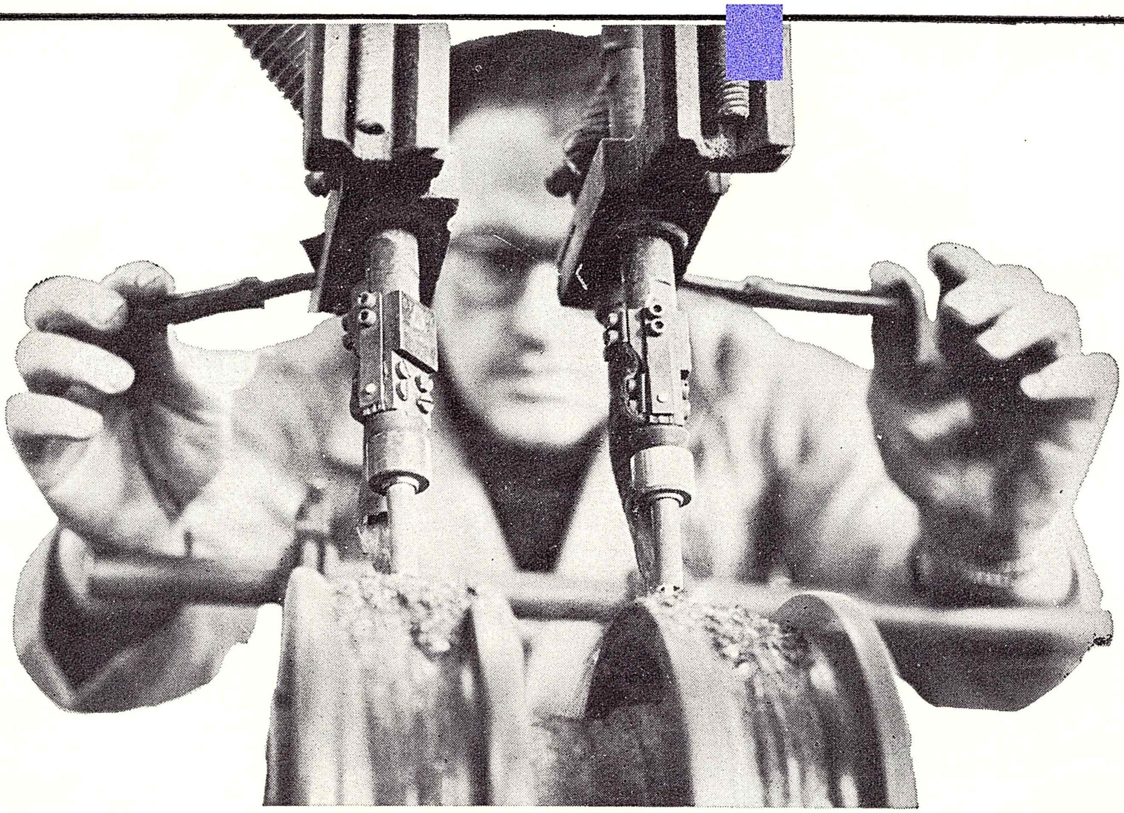

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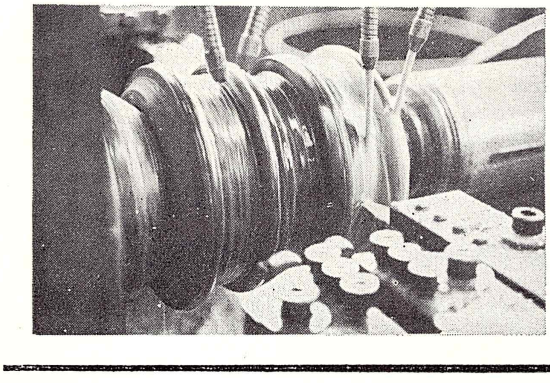

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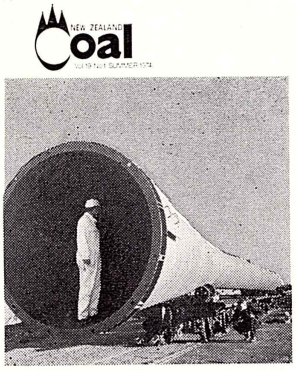
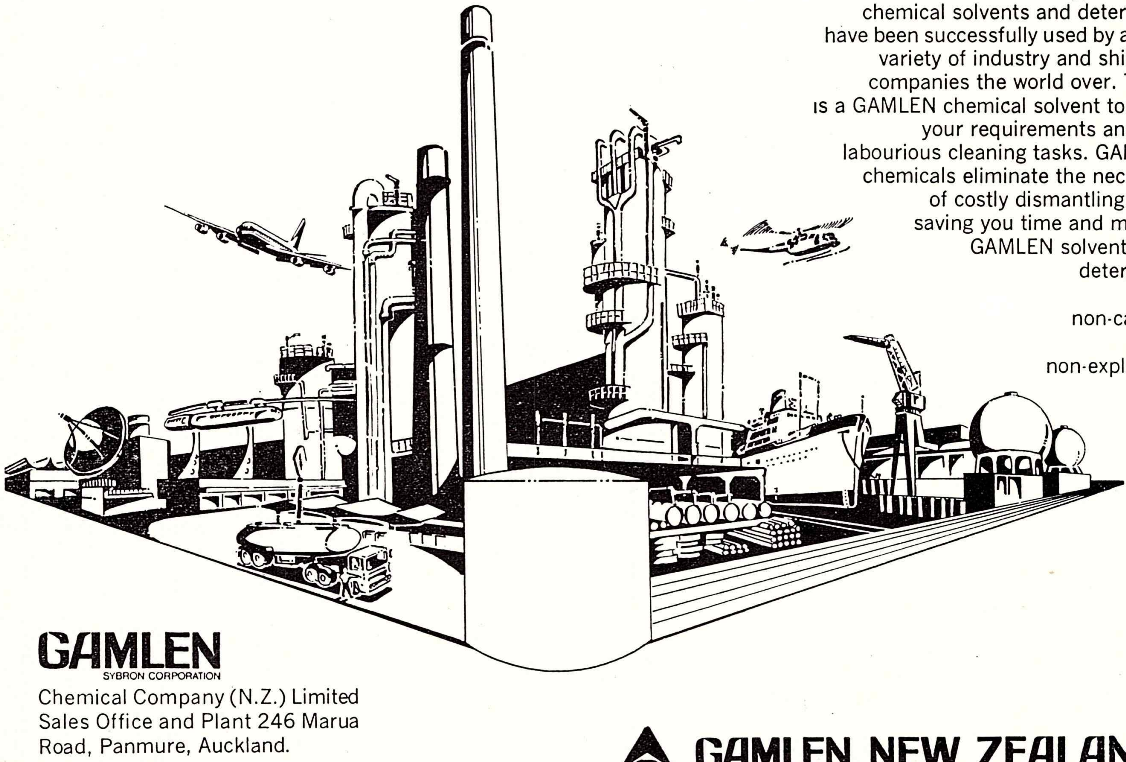


OUR COVER PICTURE

The Alliance Freezing Company at Invercargill prepares a stack for its new coal-fired boiler. Thought to be the largest shell boiler ever made in the Southern Hemisphere, the 60-ton Babcock and Wilcox boiler was ordered for coal use considerably before the "energy crisis" brought coal's advantages to the fore. The 30-metre (98 feet) stack was made by J. K. Stevenson Ltd of Invercargill.



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MEN IN MECHANISED MINING

The Rotowaro No. 5 team of Huntly's mechanised mine talks to "Coal" about Mechanised Mining and People:

"They're not cogs in a machine."

Men in mechanised mining: One shift of the Rotowaro No. 5 team at Huntly's mechanised mine (left to right) — Barry Hedley, Des Ruston, Arthur Beadle, Lex Liddle, Jim Watson (deputy), Roy Gill, Claude Quest and Bill Baker.

Manager: "They're not cogs in a machine."

Miner: "A hell of a difference — the old pick and shovel's gone — you've got to work as a team, from the manager down."

Manager: "It's something we've had right from the inception, this team spirit which we've tried to develop because the concept of mechanised mining is total involvement. If one man fails it can let the whole team down."

Deputy: "The amount of supervision has to be more than in hand mining because of the rapidity of extraction, but the miners are well aware of the dangers that exist."

Manager: "These men were sub-contractors in shovel mining. When you recruit them to mechanical mining you have to weld them into a team and develop the team spirit."

Miner: "No bloody comparison. It's dirtier, the money's good, but you're not shovelling your guts out. After 36 years of handmining, its something I like doing."

(This man volunteered for the stone drive work and stayed on for the coal — especially interested in the timbering.)

Fitter: "For myself, there's no comparison. At McDonald we were struggling with winches. We've none of that here. There's a variety of work on hydraulics and mechanics."

Miner: "It's easier — it's the only way to get coal out at a profit — there's more money in it for the men."

Manager: "One bugbear was the old bargaining system for wages. Fortunately in our system there's very little bargaining and our policy is the system of scrupulous honesty. Any suggestion or claim for payment and we'd take a look at it, even the ones that might have seemed a bit frivolous.

INVOLVEMENT

Manager: "All men earn the same money. They've all got the same stake, but it's more than wages — it's involvement."

Deputy: "We're a big family."

Manager: "Management has the ultimate responsibility. The manager is a salaried worker, although because it's a team it's the men's mine as much as management's."

Deputy: "There's a terrific team spirit — it's been very surprising."

Manager: "We've got the team we wanted."

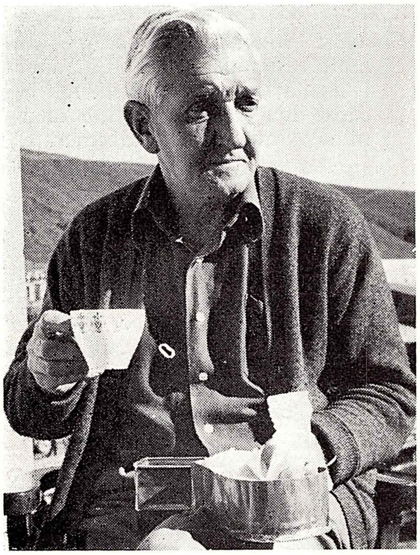
CHANGE

Deputy: It's a big change from the official's point of view. We're not walking round in powder smoke in this type of mining, though we get a fair amount of dust."

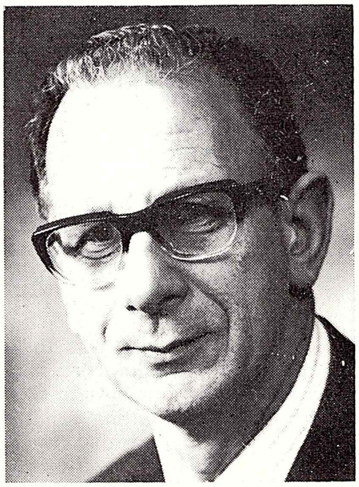
Miner: "I volunteered — for the change. I dropped money to come here."

Manager: "A lot of New Zealand mining men — being conservative -- said 'Machines won't work.' If we'd made a mistake and had an accident . . . . We had to be super-careful in every phase right from the beginning. We got the men together and

More of the men in mechanised mining: Left to right, Morris McKenzie (deputy), Nordy Saunders, Charlie Bullock, Richard Kereopa, John Osbourn, Pat Kingi and George Tumai.



Jim Wilson, once a miner, now storeman-clerk at Rotowaro No. 5, spends crib time in the sun. His crib tin has been a constant companion since he first began work. Bought for him by his mother, it is shaped to take slices of bread as cut from a round-topped loaf.



Bill Munden, once a union delegate on the national council of New Zealand Mineworkers, and now manager of the Rotowaro No. 5 team.

Edgar Thompson, underviewer Rotowaro No. 5.

talked to them. We give them reasons because each man must know why and must know how. We got them together, told them how we'd do it and the reasons for doing it. We stressed safety, and we had our 'fumble period' for 12 months. We retracted steps but always there was a continuing dialogue."

Miner: "We've got a great boss here. We don't have much argument."

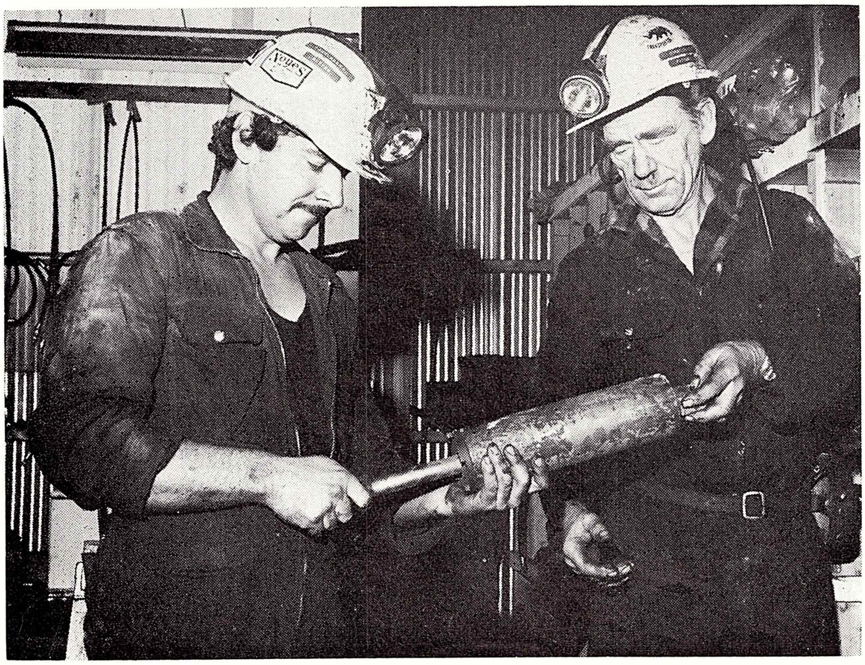
Manager: "We found that a tradition of mining had grown up in a district, or perhaps a tradition grew up in a mine where conditions were different, but we had to overcome those traditions to establish new ways.

"Always we saw more than one way of doing a job."

Apprentice fitter: "Very interesting — there's more future here."

SUCCESS

Deputy: "It is a success, but at the beginning the men in the area were a bit wary of it — the Continuous Miner was called 'The Monster' because miners couldn't visualise the machine in the narrow roadways of the manual mines. But roof bolting's made it possible."



Harry Briggs (right) and Tony Allan, fitter and apprentice fitter at Rotowaro No. 5.

Miner: "I've had 20 years in charge of mechanical loaders at Pukemiro. There's a future for this type of mining — you've only got to look at the tonnage."

Manager: "Men were told 'You're fools going to No. 5' but we ended up with a common objective: what could be the salvation of mining in the Huntly area. These men are the pioneers — they had to try new ideas. They couldn't accept 'It can't be done' or 'It can't be done this way'. It had to be 'We'd give it a try'.

"The management had to make decisions but we had to consult."

Deputy: "Management's attitude is if there's work to be done then get stuck in. It creates a good spirit."

Fitter: "They put a damned lot of coal out more easily."

Manager: "The opinions of the men are valuable to the management. If we want to know the details of how the job is done then we ask the man who does it. In the past, he felt he was there to do as he was told, but we began by having group discussions and training a team."

COMMUNICATION

Manager: "You've got to have communication upwards and downwards. Too many people are too conservative and say that some of these things concern management alone, but in the close confines of a mechanised mine responsibility is shared among everyone."

Union Secretary: "Good — extra good. Should have been brought in years ago."

Manager: "People are the most important part in our operations. No two people are the same so you've got to understand people. It's the people who operate the machines who make it go. If they're properly trained, if you've got team spirit, then it's a success."

Miner: "It's a young man's game for machine operating and there's room for older men timbering and on other parts of the job."

Manager: "Younger men may make better operators but that's not an inflexible rule. Any miner will be able to fit in. Because all get the same wages there is no conflict about the job."

DIFFERENT

Deputy: "We all have a really good send off at Christmas in the workshop. This is completely different from other mines, which are more impersonal."

Manager: "My criterion is that the manager should go away and the mine should function. The day of the autocrat has gone — men don't like to be spoken to like dogs. I know, because I've been a miner myself. New Zealand mining in general is much better than in the past."

Deputy: "In the future you're going to need education."

Manager: "It's the way for mining to go."

Miner: "Seems to be fair enough — it's the way to get the coal out."

Arthur Beadle (left) and Claude Quest (hiding behind Bill Baker) wave to "Coal" as they go below, the mechanised way.

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southland produces cosy coal warmth

Mr J. Doherty checks rolled steel plate for use in Heatamatics. His own house is heated by a Heatamatic, and a variety of radiators in his home is explained by his using his own installation to test new units.

WINTON

Best proof of the effectiveness of Southland's coal-fired domestic heating industry is the story about the farmer who thought he'd escape the rigours of winter in the deep south by taking his wife to the Pacific Islands for a mid-winter holiday in the tropical sun.

"Now I've got a Heatamatic in the home, we're not going — it's too warm at home!", he told Mr J. Doherty, who evolved the Heatamatic design and manufactures the appliance at Winton, 32 kilometres from Invercargill.

After working as a motor car mechanic, Mr Doherty — then in partnership with his brother — developed a metal-working business. Today manufacturing bulk bins for lime spreading and other specialised work is still an important part of the business of Doherty Bros Ltd, many of the bulk sowers going to customers as far afield as the North Island.

"Mr Frank Marshall, formerly District Manager of Mines at Ohai, asked us to build a Warmatic from plans supplied by the Coal Research Association," Mr Doherty says, explaining how he was introduced to New Zealand's major indigenous fuel.

Future

"There's a future in coal," someone else advised him, and Mr Doherty allowed himself to be talked into Warmatic production. The first one worked very well and a second was soon being produced.

About this time Mr Peter Toynbee, Director of the Coal Research Association, showed him the plans of the Heatamatic, as designed by the C.R.A.

"I can't say enough for Peter and his team," Mr Doherty says, describing the frequent visits to Winton by members of the C.R.A. team to help evolve production units.

The early models had a square section boiler, but "Testing and manufacturing round ones is better." "Better" for the manufacturer also means improved productivity for the process and thus less cost to the buyer.

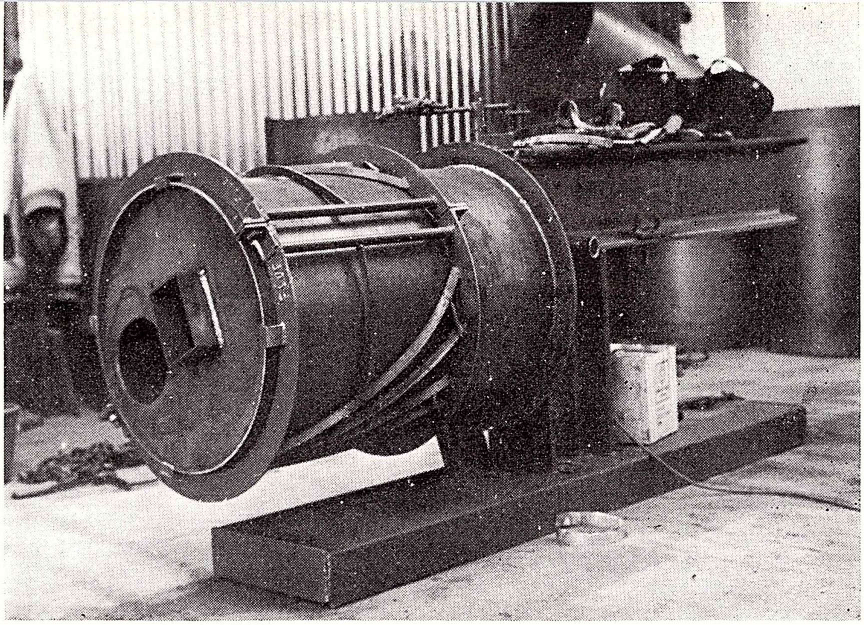
Sales

Sales for Heatamatics have mainly been by word of mouth, inquiries from farmers, townspeople in Winton and Invercargill residents. Four were sold in Christchurch as the word about cosy coal warmth percolated north.

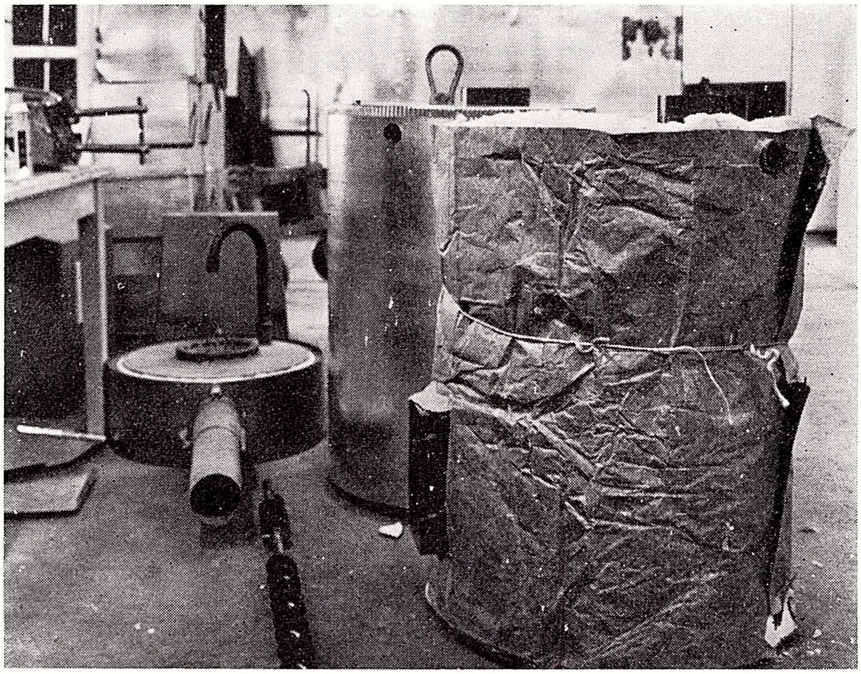
Now that Mr Doherty has occupied new premises for Heatamatic production in Winton, a Dunedin firm and a Christchurch heating firm are taking over northern distribution and installation. North Island customers will be supplied by a Hamilton company which will make its own boilers, and will use Winton-made castings and other parts.

In evolving the present Heatamatic design, Mr Doherty substituted a pull-through auger for the former "push" arrangement. The augers are turned

Winton, site of Southland's hot-water domestic home heating coal-fired appliance production, has a vigorous community spirit.

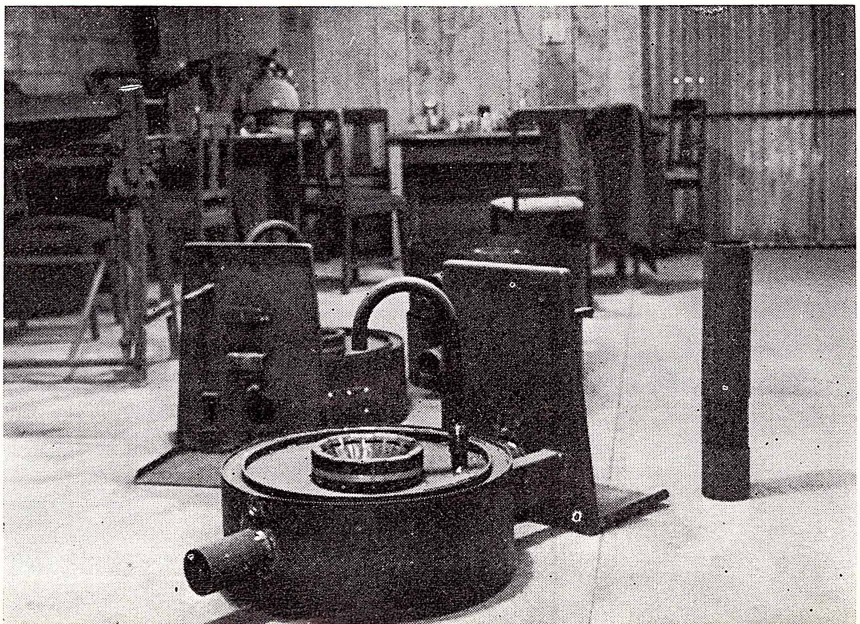


A Heatamatic boiler taking shape in Doherty Bros' new factory in Winton. The new premises, 929 square metres, will be producing fully by the end of the year.



Lagging around a Heatamatic boiler (foreground) is covered by a galvanised iron sheath (rear).

The heart of a Heatamatic — the under-fired coal furnace.



by imported gearboxes, and powered by electric motors.

"We paid a lot of attention to ease of maintenance in the design," says Mr Doherty — reflecting a lifetime of practical experience in mechanical work, especially where cars sometimes can be frustratingly difficult to repair because of stupid design details.

Ease

Ease of maintenance can be expected to help sales, if repair or service charges can be reduced to the customer's benefit, and less time without cosy coal warmth results.

Winton has advantages through being close to the city of Invercargill, yet offering a stable work force. Of the 18 men who profit by jobs as a result of this coal-based local industry, eight have been with the firm for eight or more years.

Recently some apprentices have been taken on the staff, so that through coal better job opportunities have been created for some of Winton's school-leavers.

"I have faith in Southland," Mr Doherty says. While he had tempting offers to take his bulk bin construction to other towns, the development of the Heatamatic manufacturing business contributed to his decision to stay in Winton.

INVERCARGILL

Invercargill, the world's southernmost city, is also a site for coal-fired domestic heating appliances.

When the cost of heating his home rose to $1.00 a day for oil, Mr Jim Fogarty decided it was time he did something about it. A plumber who had moved into the home heating

business, Mr Fogarty had the technical expertise to design a coal-fired, hot air central heating plant.

The Ohai 03MW is designed to replace oil-fired units, so that fan characteristics, thermostat and other parts match previous oil installations. The Ohai 03MW occupies a space 1200 mm by 600 mm, and has an external hopper. The feedscrew pulls the coal into the under-fired furnace.

Mr Fogarty wrote to the Coal Research Association when he decided to make coal-fired appliances, and chose a hot air unit as the Heatamatic from Winton was already being produced as a hot water unit.

"It was really only for myself," he says of his first model.

Workshop

Now he has an 1800 square metre workshop: "We don't advertise — we can't meet the demand as yet."

"With inquiries and orders we get, we could sell one a day." A problem in selling away from Southland is installation.

Mr Fogarty is accustomed, through his work experience, to mechanical, boiler and stoking equipment.

Experienced in mechanical equipment, he is conscious of the need for ease of maintenance and has featured this in his design.

The heat exchanger is self-cleaning.

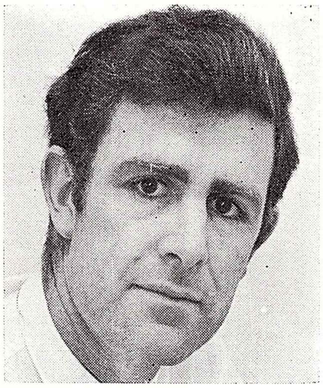
From the original design, the stoker fan unit has been modified so that the unit can be easily removed for service back in the workshop — only two wing nuts to be undone, and the unit is out.

Extensions of the design will be ducting for the home handyman to fit himself, so he can have the benefits of cosy coal warmth at even lower installation prices. Also, Mr Fogarty is planning a design of ducting within concrete floors, to keep costs down in such houses.

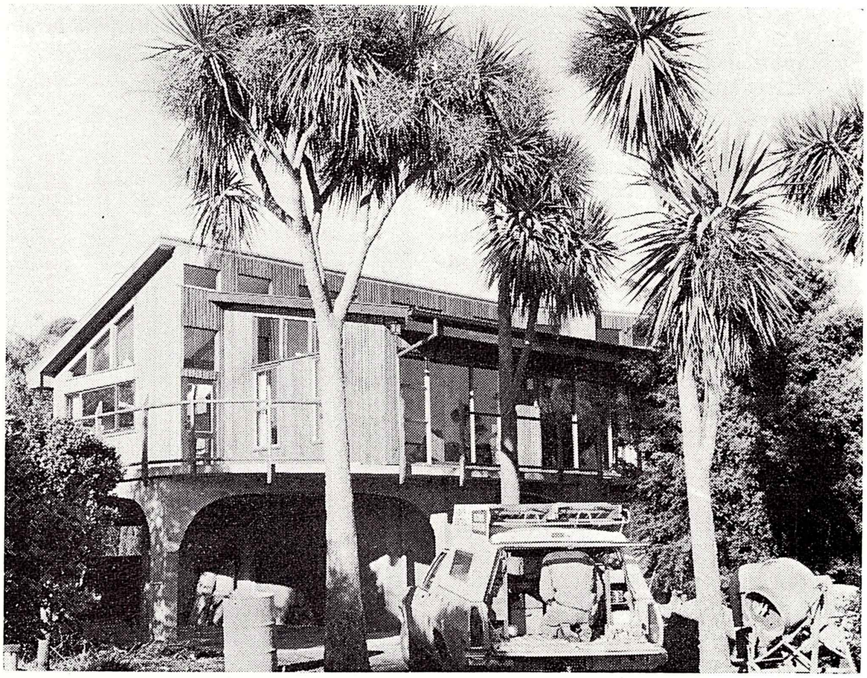
The Ohai 03MW works well on lignite, although designed for Ohai sub-bituminous coals. About half as much lignite again as Ohai coal suffices, and more air is supplied to the furnace fire.

"I'm confident that the under-fired system of coal combustion used in the Heatamatic and Ohai 03MW will meet clean air requirements," says Mr P. Toynbee, Director of the Coal Research Association.

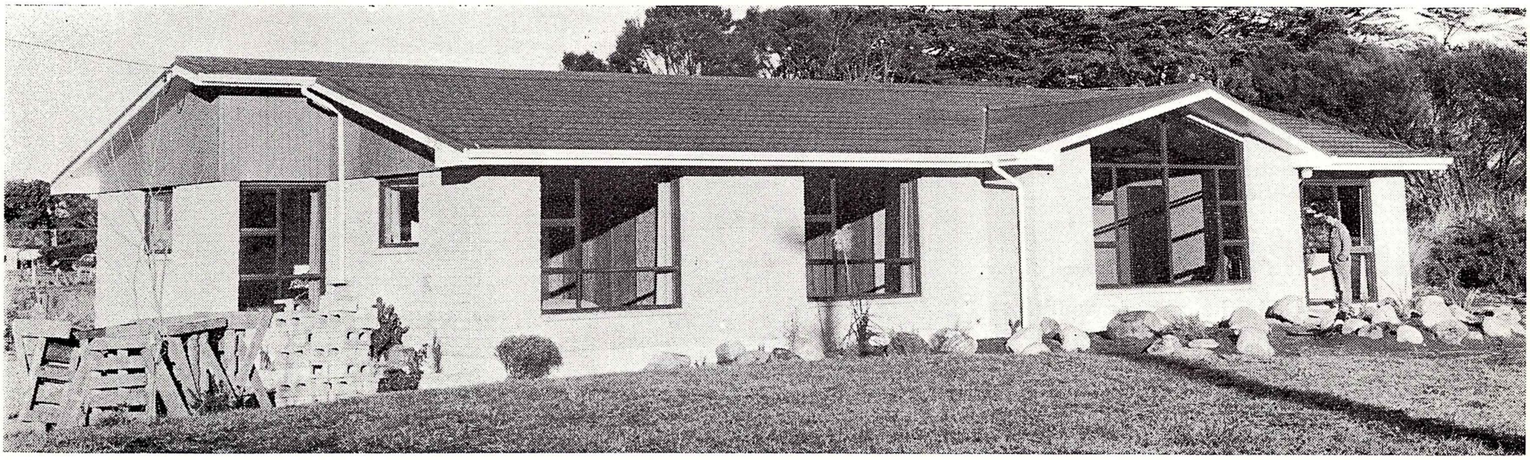
Tests are planned for the future at the Coal Research Association at Lower Hutt to confirm that the appliances meet clean air specifications.



Mr J. Fogarty built his first coal-fired domestic heating unit for his own home. Its success inspired him to design the Ohai 03MW.



An attractive new house being built in Invercargill is fully up to date with all the latest in modernity, including coal warmth with an Ohai 03MW.



Mid-winter living in this Invercargill home, coal-heated with an Ohai 03MW, means that children can walk barefoot inside — oblivious of outside temperatures.

COAL FIRED DISTRICT HEATING IN ENGLAND

Solid fuel home comfort took a big stride forward when the mining-led council at Coalville, Leicestershire, England, made history by opening the country's first district heating scheme for modernised houses.

Nearly 200 tenants, a third of them miners, will be able to enjoy the snug luxury of constant warmth once the Central Estate scheme is finished—and with about half the work done and a new house coming "on tap" every week, that will not be long.

Using only 1400 tons a year of washed singles mined at nearby Snibston, Whitwick and South Leicester collieries, the scheme climaxes years of discussion, planning and hard work by the council, Coal Board and contractors Bruun and Sorenson Ltd.

It also means a new lease of life for the nearby public swimming baths, once thought beyond repair but now warmed by district heating.

Economical

Before the Coalville scheme came "on stream" it took 17 tons of coal a week to heat the baths alone—today 14 tons a week heat the baths and the first 70 homes to be "converted".

Says Len Simpson, Coalville's chairman (a deputy at Snibson), who unveiled a memorial plaque on the estate's central boiler house at the opening ceremony: "I've seen houses condemned which were in a better state than these used to be. Many of them were built 45 years ago, but by modernising we've given them another 50 years of life."

At an improvement cost of £3400 a house, tenants now have spacious kitchens, modern bathrooms, two indoor toilets and enlarged rooms.

Said Mr Simpson's wife, Mary: "I think they're a treat. We own our own home nearby, but I'd be quite happy in one of these houses."

For Coalville's cosy tenants, nothing could be easier than their new heating system. There are no fiddling gadgets to meddle with, so it poses no problem for the old folk. Yet each house has enough radiators to ensure a downstairs temperature of 21 degrees C and 18.3 degrees C upstairs.

Each radiator and domestic hot water tank is metered so the council can assess the fuel bill—and at Coalville it's likely to be a lot lower than elsewhere.

Low bills

Explains Mr Simpson: "Tenants pay £1 weekly with the rent. Then at the end of the year we adjust the payment according to whether they've used more or less than £52 worth of heating—and if it's less they get a rebate.

For pitman tenants who get the full cash value—over £100 —of their concessionary smokeless fuel allowance, it means money saved. "They are on the same basis as other tenants and can claim a rebate with what they don't use of their allowance," says Mr Simpson.

"Everyone seems satisfied, and we've had five other councils here to see for themselves—and they were all impressed. We plan to extend the scheme, and tenders have been accepted for another 98 houses at Ellistown."

—British "Coal News".

Solid Fuel district heating has a long list of built-in advantages. For tenants it means:

- ✻ Cleaner and cheaper heat.
- ✻ Unlimited hot water.
- ✻ Greater safety—because only hot water enters the house.
- ✻ Simpler operation—no clocks or gadgets to set.

For councils it means:

- ✻ Lower maintenance costs—no chimneys to repair, no problems with hard water, and houses need less decoration because of low condensation.
- ✻ No burst pipes in winter to cause damage to ceilings and decorations.

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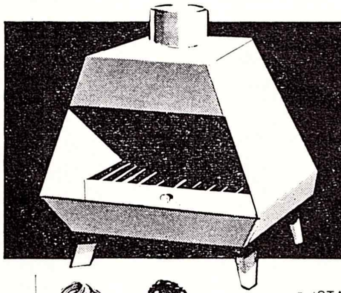

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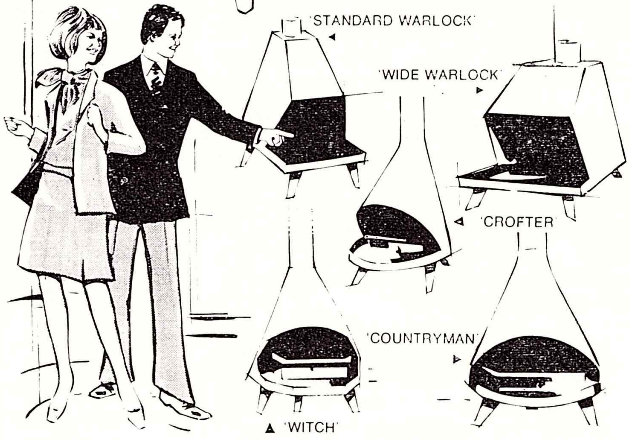

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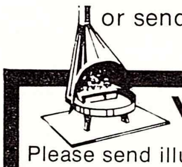

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NEW ZEALAND'S FUNNY SUB-BITUMINOUS COALS

by P. A. Toynbee,
Director, Coal Research Association.

Most of our New Zealand coals display unique properties by overseas standards, but this is especially so with the sub-bituminous coals of the North Island and Southland; the coals now accepted as those of greatest economic significance in New Zealand.

The early settlers scorned the use of these unfamiliar coals — they did not think of them as coals, but called them lignites—and favoured the bituminous coals such as they were used to. Therefore, our early coal industry was centred around the West Coast. The bituminous coals there were higher in rank: of higher quality, it was thought.

They were suited to gas manufacture and to manual methods of firing, for railway traction and industrial boilers. Modern developments in coal use have seen the demise of the hand-fired locos and boilers, and these bituminous coals have generally not been suited to the mechanical methods of firing which have been developed overseas for use with overseas coals.

To some extent, the same applies to our sub-bituminous coals. They have often not suited the firing equipment designed overseas for weakly-caking coals, but our growing understanding of their properties has enabled us to modify the established firing systems and to develop new ones suited to the special coal properties.

It is only with this new knowledge of our sub-bituminous coals that we have come to realise that these coals are suited to industrial firing and to automatic control, probably better than any other coals in the world.

Properties

This article is concerned primarily with the properties of sub-bituminous coals as they affect use, but the distinguishing features of these relatively young coals begin with their geology. New Zealand coal seams are generally much thicker than those found overseas and they are usually closer to the surface. This permits a greater proportion of opencasting. With our underground mines, access to the coal face is generally through a "drift" into a hillside, which may even slope up to the coal face. At present there is no mining in New Zealand which uses a vertical shaft as is commonly found overseas.

With underground mining, the larger seam thicknesses are not such a great advantage as might at first appear, because only one cut, about 2.5 metres high, can generally be taken from each seam. The economic limit of opencasting relative to underground mining, is expressed as the ratio of overburden to seam thickness, but where the seam thickness is greater than 2.5 metres, the greater recovery with opencasting is an important issue.

This increases the ratio of overburden to seam thickness at which opencasting is economically preferred.

The extremely low ash content of New Zealand coals makes unnecessary coal-washing processes installed at nearly every overseas mine.

The stone and washery-refuse heaps at these mines are unknown in this country.

The proximate analysis, on an air-dried basis, of a typical sub-bituminous coal, is:

	Percentage
Moisture	17
Ash	4
Volatile Matter	38
Fixed Carbon	41

The calorific value is of the order of 10,000 Btu/lb, the sulphur content about 0.3 per cent and the crucible swelling number zero.

The high moisture content is typical of lower-rank coal, reducing the calorific value of the fuel as fired. The moisture content of these sub-bituminous coals varies with the humidity of the air, and analysis of these coals has to be based on a standard condition of the coal brought to equilibrium in a standard atmosphere of 20 degrees C and 70 per cent relative humidity.

Ash

Ash contents are phenomenally low by world standards. In overseas countries, coal is often washed to reduce ash contents to 20 per cent for use (say) in power stations. However, in some parts of the Waikato, ash contents of 2 per cent in the raw coal are found, the average for Waikato coals being about 4 per cent.

The ash is much more homogeneously distributed throughout the coal substance than with overseas coals. This results in a light and fluffy ash, more like wood ash, which in combustion processes can accentuate fly-ash problems and which in some processes can produce relatively large volumes of ash. Ash-fusion temperatures are generally lower than those of overseas coals: again there can be problems with slagging on brickwork in industrial firing equipment.

The volatile content is generally much higher than in overseas coals. This feature requires different proportioning of air in the combustion process. Sufficient secondary air, and sometimes turbulence - promoting air jets, are required to ensure that volatiles leaving the fuel bed unburnt, are completely burnt in the combustion chamber.

Sulphur contents are extremely low. There are one or two pockets of high-sulphur coal, but these are generally not mined today.

Laymen seldom realise that this is one of the most important pollution aspects of coal firing: many still blame coal as the arch criminal in the pollution of our cities without realising that the sulphur content of industrial fuel oil can be more than ten times as great as that in our sub-bituminous coal.

These sub-bituminous coals have no swelling or coking properties (the crucible swelling number is zero). More simply, they are free-burning, showing none of the agglomeration or coke formation associated with bituminous coals. When devolatilised, these sub-bituminous coals form a char whereas bituminous coals form a coke.

Grading

Because these sub-bituminous coals have no swelling properties, the fuel bed does not open up as it does when a bituminous coal swells. This brings a greater need with a sub-bituminous coal burnt on a grate—for a graded fuel—to ensure that the fuel bed is permeable and that the burning rate is uniform over the bed.

Their free-burning properties enable these coals to be fed by gravity on to a fire. With a bituminous coal, the swelling and sticking of coal particles can hinder such downward movement. This property is used in designing automatic gravity-fed boilers where the sub-bituminous coal simply feeds down through a tube, on to the fire as required: the simplest of all firing systems.

The free-burning properties also suit these coals to gasification processes where air and steam, or oxygen and steam, are blown through the fuel bed to gasify completely the coal material, leaving only a residue of ash. Producer-gas manufacture (for the firing of kilns) is certain to flourish in the future with these coals which are so well suited to gasification.

Combustion of sub-bituminous coals in open fires is marked by a much lower emission of smoke than is obtained with bituminous coals—the level, however, would probably not be low enough for acceptance in the clean air zones which are being established.

It has recently been shown that, on heating, these non-swelling, non-softening coals develop some degree of plasticity at 400 degrees C, the point where carbonisation begins to occur. Laboratory and semi-commercial-scale tests have shown that this phenomenon can be used, under carefully-controlled conditions, to compact the coals into first-class briquettes, without the need for any binder. Some of the coal volatiles are driven off in this hot-briquetting process and the reduction in volatile content is likely to be sufficient to make these briquettes acceptable in smokeless zones. With the new emphasis on solid fuels, and on smokeless fuels, it seems that this research work, which stopped several years ago, may be taken up again.

Reactivity

The most outstanding feature of these sub-bituminous coals is their high reactivity to gases such as carbon dioxide and steam, and the Coal Research Association has been investigating this. The reactivity is measured by the rate of reaction of the coal with carbon dioxide under standard conditions.

Our sub-bituminous coals show reactivities two or three orders greater than overseas coals and five times greater than charcoal!

It is this high reactivity which makes the coals so well suited to pulverised-fuel firing, and for use in ironsands reduction (as at New Zealand Steel), and it explains much about coal utilisation not previously understood.

The high reactivity encourages the endothermic reactions of the coal with carbon dioxide and steam during combustion, and these reactions tend to cool combustion processes.

Thus, temperatures in the fuel bed are generally lower than those overseas and this explains why low ash fusion temperatures do not cause as much trouble as overseas experts have expected. Again, Englishmen forecast serious maintenance problems with our low-ash coals on chain-grate stokers, because the thin layer of ash was expected not to give the necessary protection to the grate from the radiant heat above. The expected problems do not occur, certainly not to the extent expected, because the high reactivity ensures that combustion proceeds at a lower temperature.

Most of the recent developments in the use of coal—the new appliances and modifications to existing equipment—can be attributed to our increasing knowledge of the peculiar properties of our sub-bituminous coals. Much has been learnt of these coals; much more remains to be investigated to ensure that maximum benefit is derived from our most important reserves of indigenous energy.

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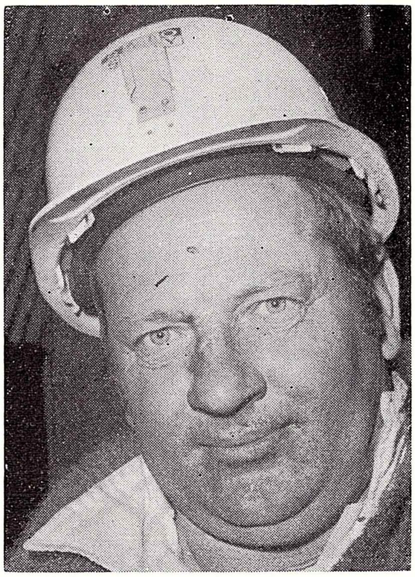
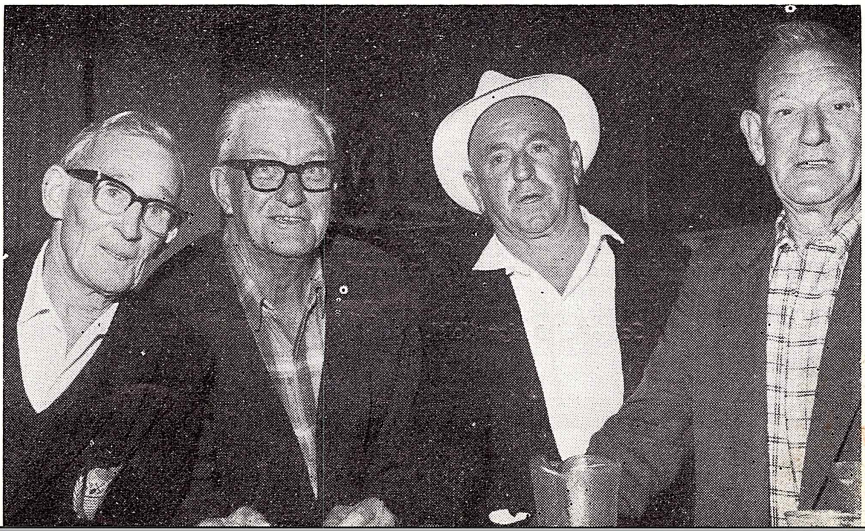
PEOPLE . . . in and out of the coal industry (No. 2)



Mr Don Humphries, a Southlander now living at Huntly. Once a miner, Mr Humphries is now screenhand at Rotowaro.

A most important worker in the coal industry, Miss Margaret Eddy, formerly of Waipawa, Hawkes Bay, is the salaries clerk at Head Office of the Mines Department. Margaret is responsible for processing the pay and pay rises for State Coal staff throughout New Zealand.

Four former members of the coal industry relax in the congenial atmosphere of the Huntly Workingmen's Club. From left: Mr Sid Peden, who retired in 1969 after working in the Renown, Glen Afton and McDonald Mines. Mr Ron Dunn spent 49 years as a miner at Hikurangi, Dobson, Glen Massey and Renown before hanging up his helmet in 1972. Mr Fred Delloway retired in 1971, having accumulated 45 years in Denniston, Millerton, Stockton, Blackball, Glen Massey, McDonald and Glen Afton Mines. Mr Jack Gaskill was at Renown and Pukemiro Mines before retiring in 1968.



COALTOWN

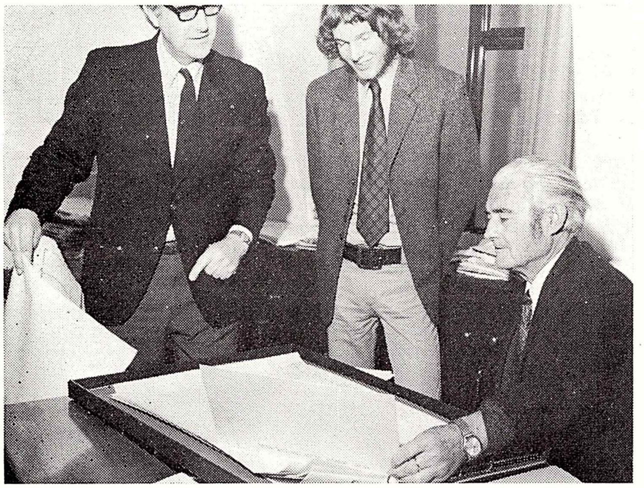
Westport's prospective museum for Buller coal — Coaltown — has been arousing interest among those people in Wellington with West Coast or coal associations.

Trustees for Coaltown at Westport organised a raffle for a car to help raise funds for the museum. Supporters in Wellington who took tickets included: (a) The Hon. F. M. Colman, Minister of Mines, photographed when his secretary included a raffle book among the official papers which cross the Minister's desk every day. (b) Some of the 17 coal merchants who took tickets when raffle books were produced at the annual general meeting of the Coal Merchants' Federation at Lower Hutt. Guests from the South Island coal merchants who were at the meeting also gave support for a coal cause. (c) Some of the head office staff of the Mines Department display their tickets in the Coaltown raffle. Mr G. K. Keown, Assistant Secretary of Mines (technical), (sitting, right) and Mr W. Partel, who will take over from Mr Keown when he retires next year, is next to him. Mr Peter Mumm (standing, right), Administration Officer, comes from Westport and was quick to support a Buller project. Mr Way Cunliffe (standing, centre) was educated at Buller High and although he bought a ticket at Greymouth was ready with support when given the chance to buy a second ticket in Wellington. Mr A. G. Summers is Director of Administration of the Mines Department and has been officially associated with the support so far given to the Coaltown project by the Department.

(a)

(b)

(c)



Mr P. Blanchfield, Member of Parliament for the West Coast, (right) has a preview of the plans for Coaltown in his office at Parliament. Mr Michael Lamb, a fourth year student of the School of Design, Wellington Polytechnic, who has designed the layout of Coaltown as a final year project, explains details of the design to Mr Blanchfield in company with Mr A. Benner, Course Supervisor of the School of Design (left).

* * *

"COAL'S EXPANDING FUTURE" ——

Overcoming Problems in Britain

Massive new investment in mining, increasing efficiency to be helped by new incentive proposals and a common-interest approach in overcoming problems are the foundations of coal's expanding future, the chairman of the British National Coal Board, Mr Derek Ezra, told the British "Coal News" in an interview.

"The industry is on the threshold of an entirely new chapter . . . and the prospects ahead are enormous," he said. "But the will to succeed must be there from everyone."

It is now clear, he stressed, that industrialised countries face grave risks in being dependent on imported oil from politically unstable sources. Oil prices have quadrupled since last October and oil is now being used for political ends.

Independent

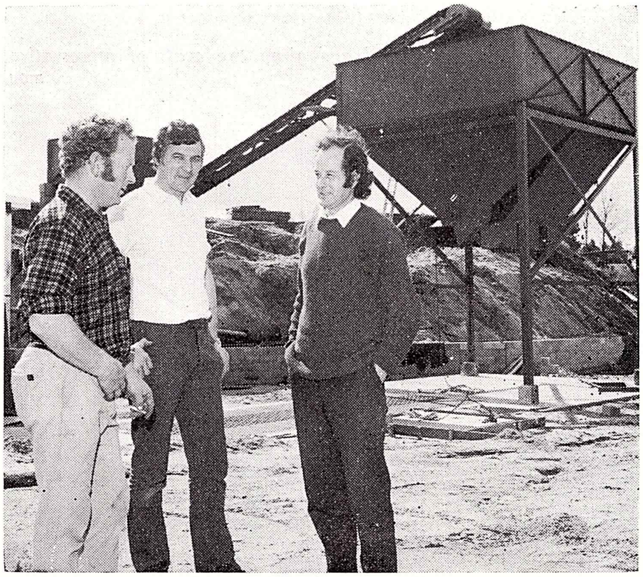
"So we have to strain every possible effort to reduce our dependence on oil so that if the producing countries decide to increase or withdraw their supplies, it won't affect us in future," he added.

Waikato Coal Sales Create New Image!

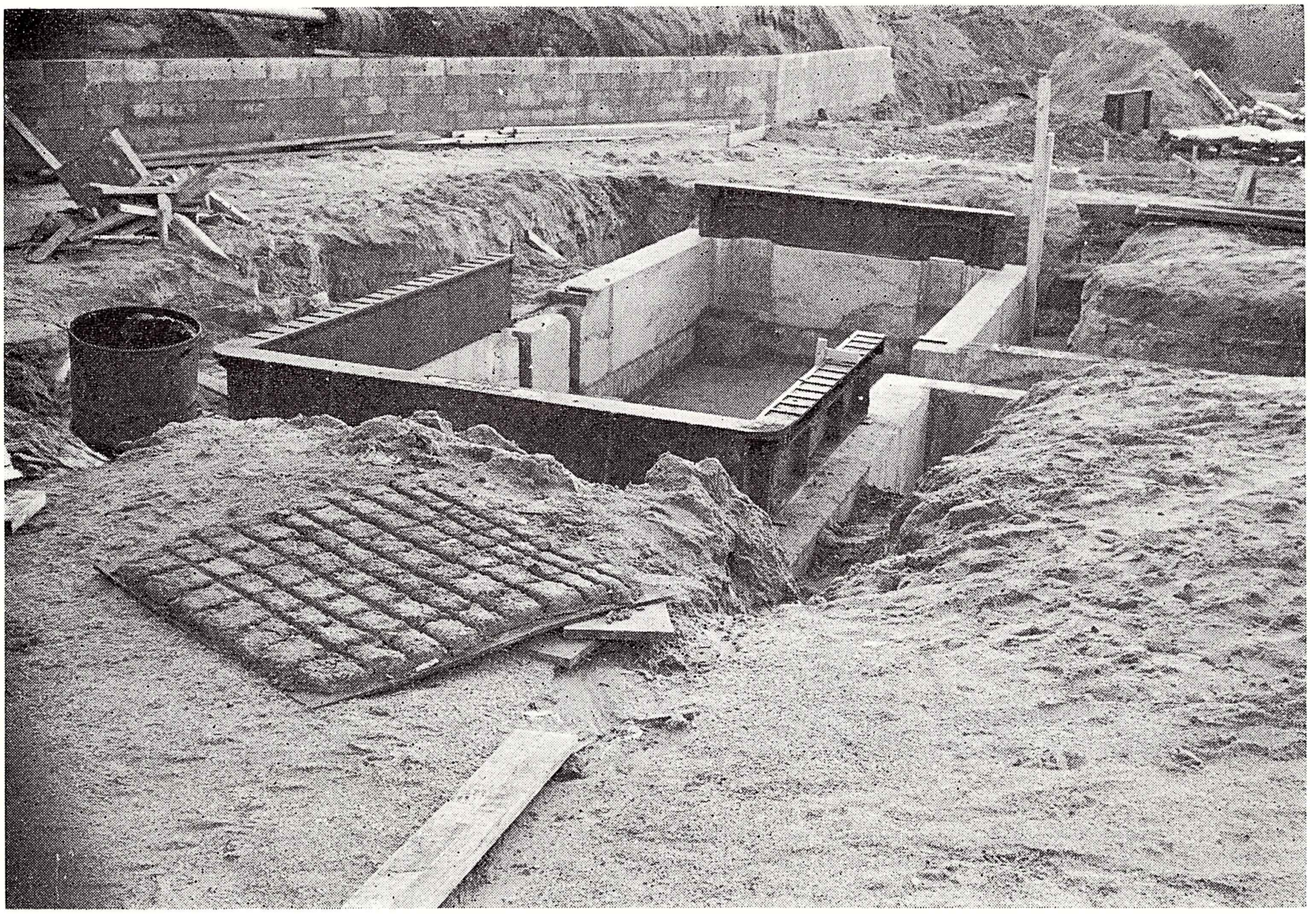
Site preparation for Waikato Coal Sales' weighbridge.

Hamilton has the prospect of an imprs are aimed at improving customer service, Structural changes at Waikato Coal Supplieoved coal service well on the way to reality. both industrial and commercial, dating from the time that B. Cronin and Co. took over from Mr D. H. Cook on his retirement last year.

Ron McCurdy (left), Marsh Te Whaka (centre) and Graham White can pack 300 bags of coal an hour — and have achieved 15,000 bags in a week during peak demand for coal. Sales for 1974 were 1800 per cent up on the previous year. New plant on order includes a modern Avery Vibrator preweigher which will be the latest model for bagging coal in New Zealand. It will be capable of filling six hundred 10 kg bags an hour — provided staff can sew and pack the bags at the same rate. The new machine will easily adapt to 20 kg and 50 kg bags, and takes the human element out of the weighing process so that the correct weight is ensured for each bag.

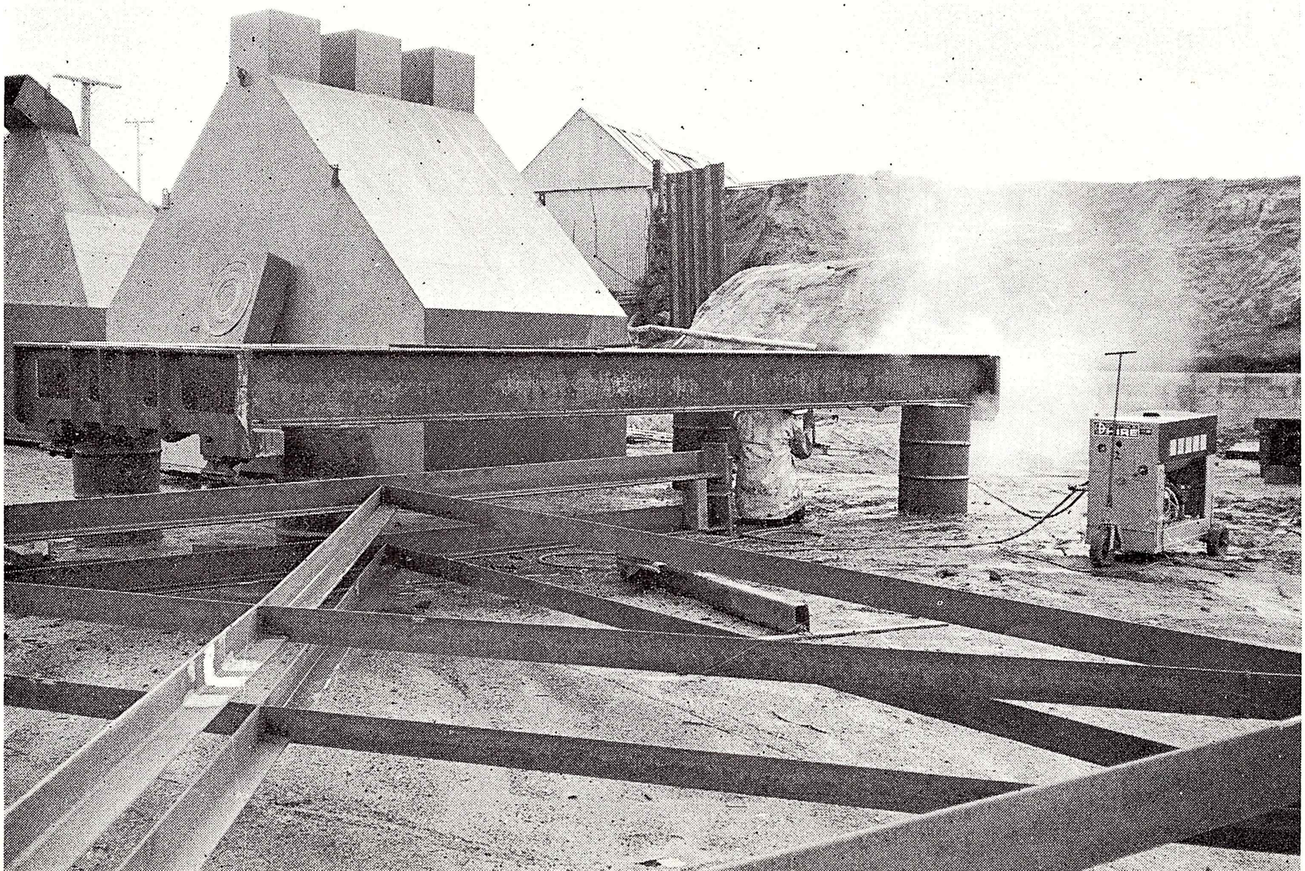


Mr G. Chesterman (left) of Waikato Coal Sales, discusses his firm's new coal-handling facilities with the engineers responsible for design and construction, Messrs J. Harlwin and D. Wilkes. Mr Wilkes was formerly a fuel technologist of the Coal Research Association and now partners Mr Harlwin in the firm of Design Manufacturing and Services Ltd, Hamilton. Two of the bins they designed for Waikato Coal Sales, and the coal feed, can be seen in the background.



Concrete and steel base for the weighbridge.

All steelwork was sandblasted and given two coats of preservative paint before assembly at Waikato Coal Sales. Bins, at rear, ready fo mounting.



WAIKATO COAL SALES CREATE NEW IMAGE

(continued from page 14)

Not the least of the improvements at Waikato Coal Sales has been doors on the bays for sales of bagged coal. In blustery weather swirling coal dust is no longer a nuisance.

Incoming coal is stored in a 10-ton dump hopper. From the hopper a 50-metre long conveyor belt can move one ton of coal a minute into either of two 25-ton bins.

One bin at present holds domestic coal — a service available to the public for bulk supplies by the trailer-load, which can save householders the trouble of going to the Huntly mines for quantity.

Already Waikato cosy coal home-owners seem appreciative of the new service, as many as 30 half-ton trailers being filled during a Saturday morning's trading.

The service was not previously advertised, but radio and newspaper advertising soon increased sales of coal during the winter.

The second bin is for industrial coal. Because the bins have been built to a modular plan they can be added to in the future so that all grades — peas, nuts and slack — will be readily available for industry.

The weighbridge came from the Maramarua coal mine. Although 18 years old, the 30-ton weighbridge has been completely dismantled and renovated before being installed on its new site. The rebuilding entailed sand-blasting the metal and applying two coats of preservative paint.

September saw the preliminary planting of trees and bushes as part of a plan to make the site as attractive as possible, and to show coal in a modern setting rather than in its former completely utilitarian aspect.

"I always have had faith in coal," says Mr Gary Chesterman, of Waikato Coal Sales. "The takeover from Mr D. H. Cook on his retirement was arranged before the energy crisis — now we really appreciate that we've done the right thing."

REVIEW

A Century of Railways at Auckland, 1873 - 1973

T. A. McGavin $1.00

N.Z. Railway and Locomotive Society

In "A Century of Railways at Auckland 1873 - 1973" Mr McGavin continues his excellent chronicles of New Zealand Railways. The Auckland-Frankton section is the busiest region of the New Zealand rail network and this book provides not only a narrative on the construction, but also tables showing the changes in traffic over the years 1880-1908, that is before the completion of the Main Trunk. Figures after this time are not included, so perhaps Mr McGavin is saving them for a future publication.

The book abounds with photographs and drawings of station buildings, yards, and of course trains and locomotives. My personal pick of these is the "N" class 2-6-2 on the Parnell Bank, but they are all interesting. Printing and presentation are of the high standard we associate with Mr McGavin and the N.Z.R.L.S. This book is a must not only for the enthusiast but also any library seriously intent on compiling New Zealand history. V.M.S.

RAILWAY CALENDAR 1975

Published by N.Z. Railway and
Locomotive Society,
P.O. Box 5134, Wellington.

Judging by the fact that at least three Railway calendars are published each year there must be considerable demand for something other than the conventional chocolate box scenery or semi-nude pretty girl which dominate the market, and for those who want to give something that is different this desk calendar is the solution.

Steam locomotives predominate, of course, from the immaculate Ab at the head of the Kingston Flyer to the Ka pair attacking the spiral with a heavy goods, but modern railroading is also well represented by the Dx-hauled Silver Star. The photography and reproduction are excellent, and the calendar printing is clear and precise. When you get one for a railway fan friend buy one for your desk too. It will be an immediate talking point with your visitors. V.M.S.

BRIGHT IDEAS KEEP PIT SAFER

A seven-man team have started underground and surface inspections at the Kent colliery in the British Coal Board's latest 50-pit safety campaign.

And they've already come up with a list of suggestions for improving safety. "We'll be starting on them as soon as possible and discussing the points at the safety committee meeting", said Tilmanstone safety ofifcer Dick Culver.

He said tidiness ideas were the main items — and the pit had already decided on surface lighting and tidiness objectives for the campaign.

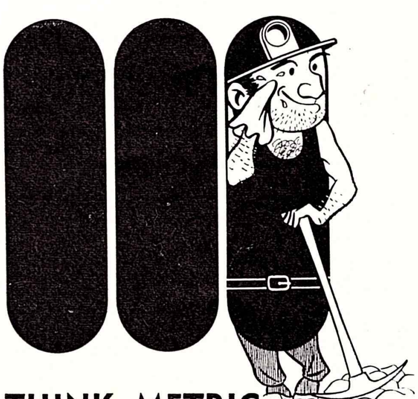
— "Coal News"

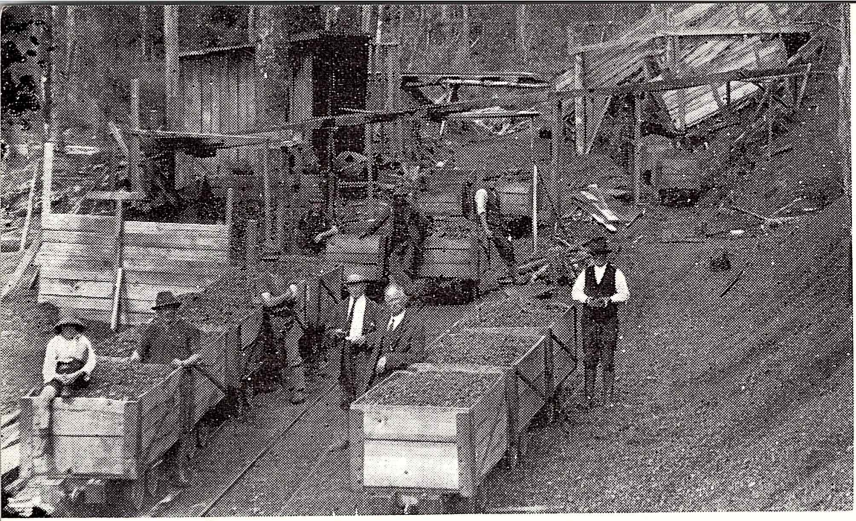
"KING" SIZE

Tongan rugby tourists met their match when they prepared to go underground at South Wales' Lady Windsor Colliery in the United Kingdom. For requests for five pairs of size 12 pit boots for the hefty South Sea Islanders were speedily met from Tondu storeman Les Popham.

"We've some pretty outsize lads ourselves but they don't usually arrive at a pit at the same time," he said. "However, I'd stockpiled some king-sized boots just in case."

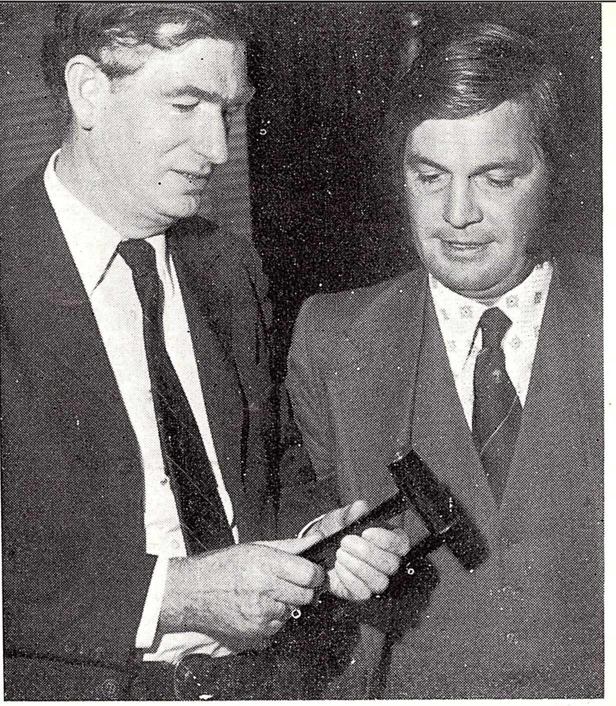
— "Coal News"





"Coal mining, West Coast" is the only identification for this photo from the Alexander Turnbull Library. Maybe "Coal" readers can identify the mine precisely to enable the library to catalogue the photo correctly?

Mechanised mining at Rotowaro has attracted a considerable number of visitors to see the continuous miner in action winning coal. A typical party of visitors consisted of Mr M. C. L. Banks, a farmer at Huntly; his son and daughter-in-law Mr and Mrs Banks, of the N.Z. Forest Service at Ruatoria, and Mr P. Bottica. manager of the Bank of New Zealand at Huntly. "I don't believe in Women's Lib if I have to go down a coal mine," Mrs Anne Banks told "Coal" when asked for a feminine viewpoint on the subject of women coal miners after her visit "below".



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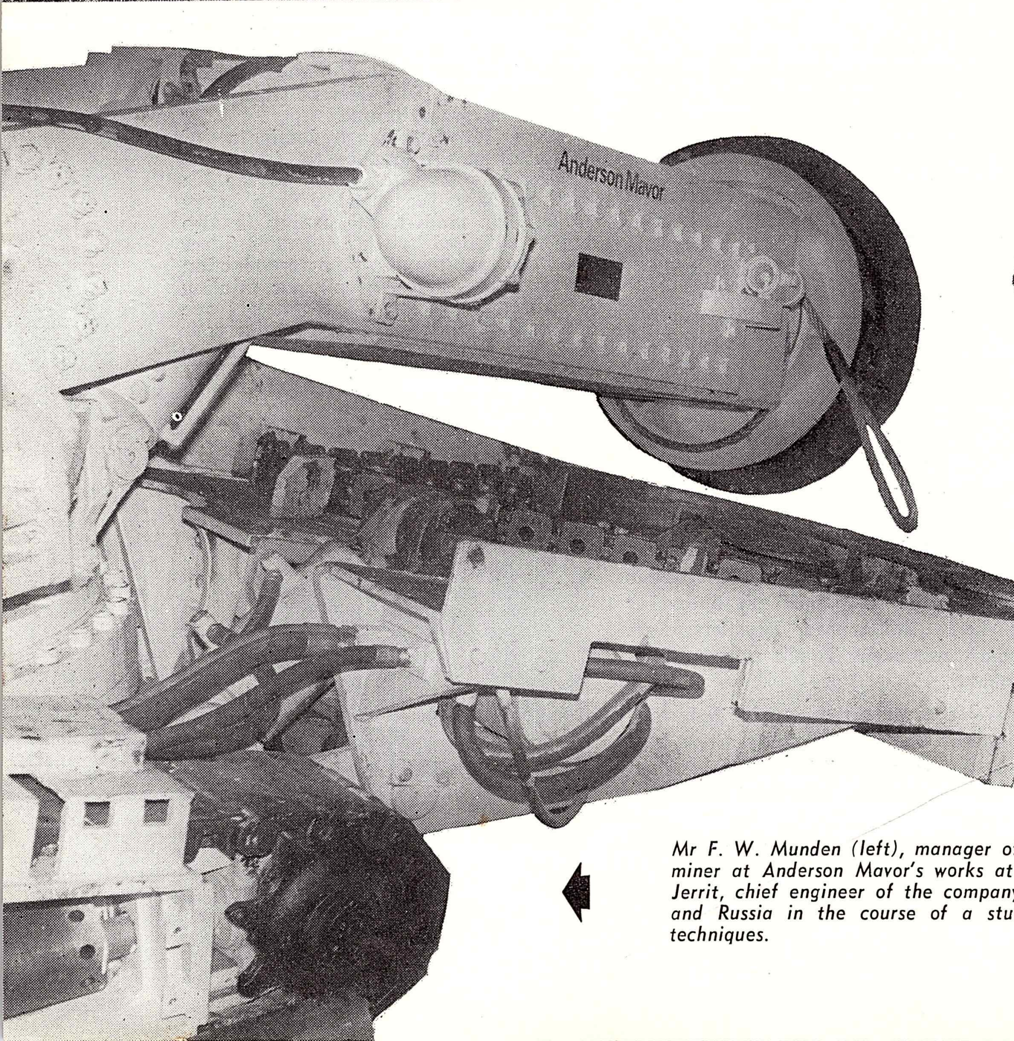

Mr F. W. Munden (left), manager of Rotowaro No. 5 mine at Huntly, is shown a boom miner at Anderson Mavor's works at Glasgow. Explaining the boom miner is Mr George Jerrit, chief engineer of the company. Mr Munden is visiting America, Britain, Germany and Russia in the course of a study of latest underground coal mining mechanised techniques.

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rial interest in coal: the Hon. F.
man, Minister of Mines, showed
in the gavel of the Coal
nts' Federation when he addressed
rchants at their annual general
in Lower Hutt on September 18
sequently lunched with members.
gin (right) called the Minister's
n to the gavel, which was made
l wood from a lignite mine at

Evan Jones, Supervisor of Mining
urses at the Technical Correspondence
titute, Lower Hutt, conducts a block
urse at Huntly for mining qualification
ndidates. Block courses, lasting a week
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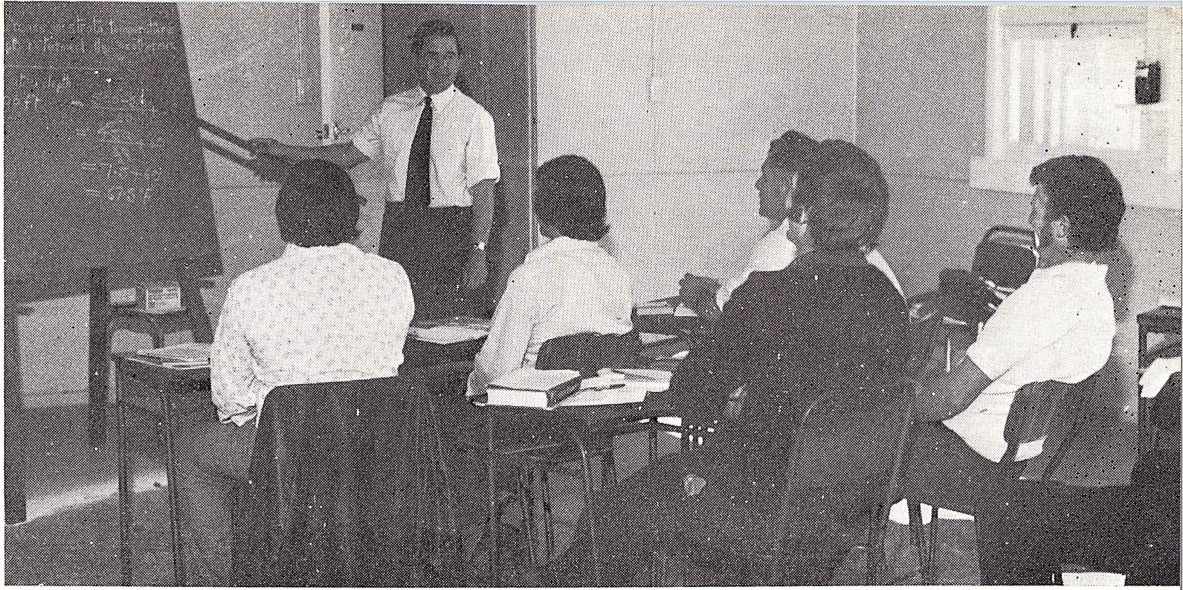
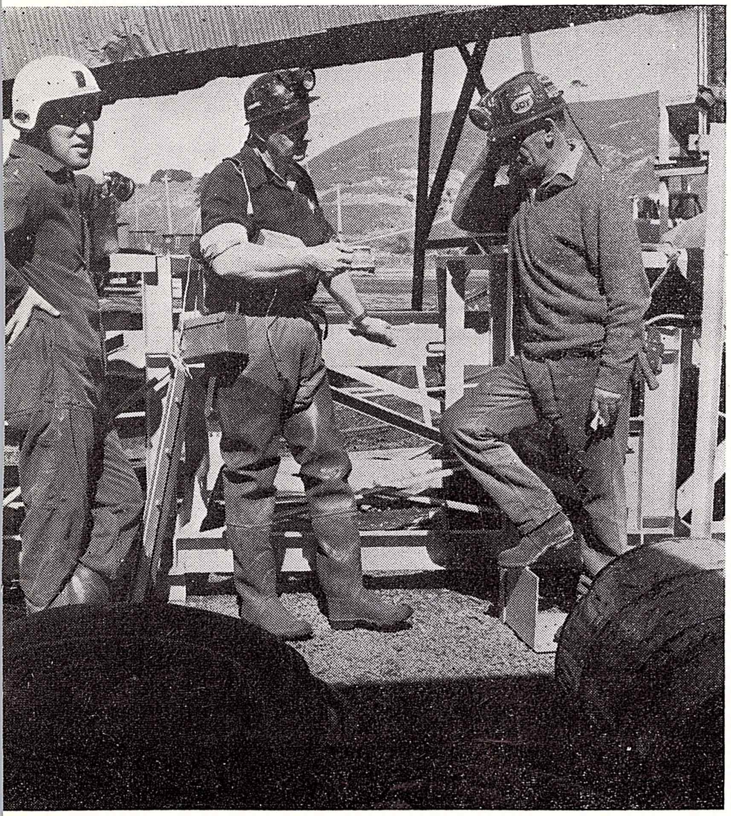
ching for students.



OUND AND ABOUT ITH COAL



s and ships and sealing wax" but more likely "volts, amps and watts". Mr S.
lectrical inspector of mines (centre) discusses a modern electronic signalling
h Mr E. Thomson (right), underviewer of Rotowaro No. 5 and Mr Frank Fleming,
ectrician at Huntly. The device is being evaluated as a possible replacement
er, present system of signalling used in coal mines.

Mrs M. Jenkins, an artist, busily at work on a job for the coal industry. She is hand-lettering some books of photographs of coal-fired boiler installations for fuel technologists to use in showing prospective users the advantages of coal. Mrs Jenkins is an American who married a New Zealander and now lives in Wellington.

COAL DEMAND — "GREAT UPSURGE"

E. H. Lange **F. M. Colman**

"Now we've got over the peak of winter demand I believe we can look back," Mr Colman said. "We cannot rest on any laurels we have at the present time. We are more than competitive with other fuels."

"The energy crisis has resulted in a great upsurge in the demand for both domestic and industrial coal," Mr B. Bergin, president of the Coal Merchants' Federation, said at the annual general meeting of the federation at Lower Hutt on September 18.

"The industry now appears to be assured of the one thing it has been lacking for years, an injection of capital which will help develop sales, thereby assisting to solve this country's energy problems," he said.

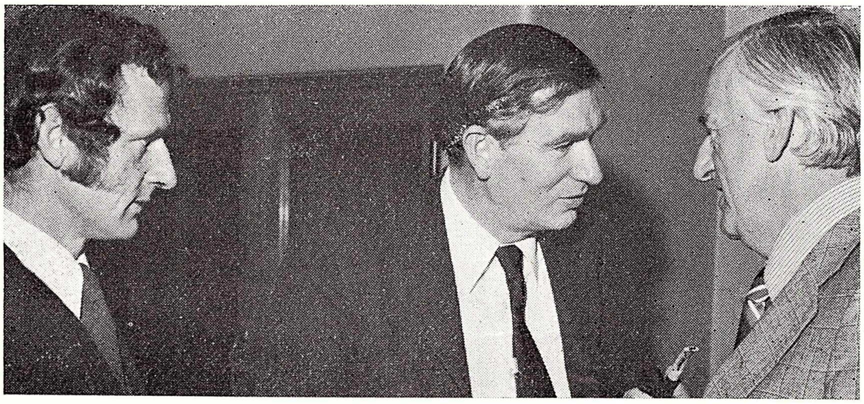
Mr Bergin congratulated a subcommittee, formed earlier in the year to take action on quality and grading of coal, for its efforts.

"It would be foolish to say that the action taken had resolved all the problems concerning quality and grading, but it has made everybody in the industry more aware of their responsibilities in supplying customers with a good clean product."

Mr Bergin, who is the manager, State Coal Depot, Auckland, was re-elected president. Mr G. Chesterman became vice-president, and Messrs G.

B. Bergin **F. M. Colman** **M. Jeromson** **G. Wye** **G. Chesterman**

"I look upon the coal merchants as the front line," the Hon. F. M. Colman, Minister of Mines, told the coal merchants. He was guest speaker at their annual general meeting. "You are close to production and close to the customers. Feedback from the customers is important."



K. Sullivan **F. M.Colman** **R. F. Grant**

"We must give credit where credit is due — that is, to the coal miners of New Zealand," Mr Colman said. "There has been no shortfall in the production of coal."

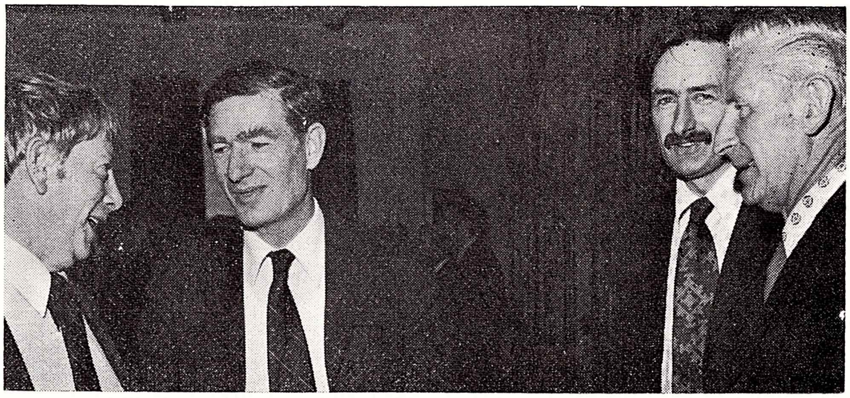
COAL DEMAND

(continued from page 18)

Wye, R. F. Grant and A. G. Wright were appointed council members.

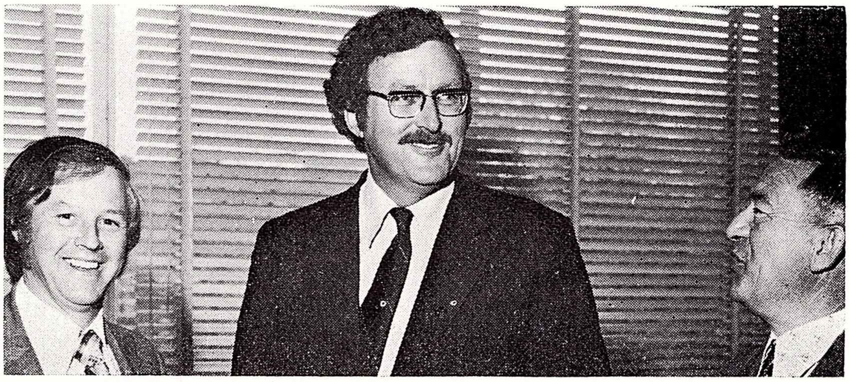
Messrs K. Sullivan (president of the South Island merchants), S. Armstrong (president of the New Zealand Coal Merchants' Federation) and E. H. Lange (Canterbury coal merchants) were present at the meeting.

After the day's business, a social evening for some of the merchants began with dinner at a leading restaurant, followed by the now traditional conducted tour of Wellington scenic attractions for the visitors to the capital.



T. Thomas F. M. Colman W. Warren L. G. Olson

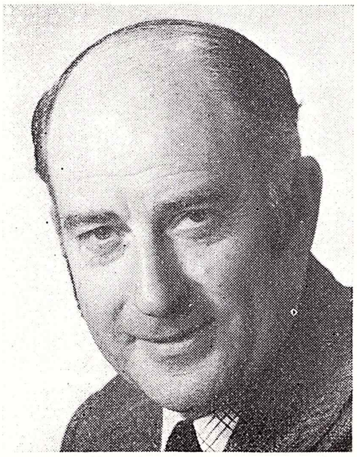
"I would like to thank the miners, State Coal, New Zealand Railways and the coal merchants for all they have done. We had to prove we could meet the demands of the market."



A newcomer to the coal merchants at their annual general meeting was Mr A. G. Wright of Palmerston North (left). Messrs K. Haywood (centre), secretary of the federation, and H. Russell were on hand to make the newcomer welcome.

BILL PARTEL—

ASSISTANT MINES HEAD DESIGNATE



Designated to succeed Mr G. K. Keown as Assistant Secretary of Mines (Technical) when he retires next June is Mr W. S. Partel, at present Mining Engineer (Coal), Planning and Development, in the head office at Wellington.

Mr Partel, B.E. (Mining), A.O.S.M., C.Eng., M.I.Min.E., was born at Dunedin and educated at King's High School. His university studies at Otago University, begun in 1943, were interrupted by wartime manpower requirements, and he graduated in 1948.

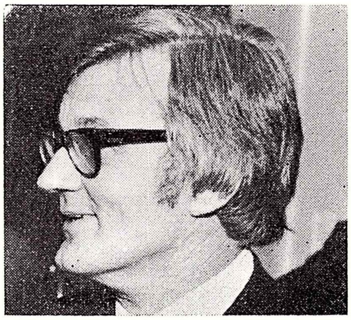
In 1952 Mr Partel went to Australia and England on a postgraduate travelling scholarship to gain experience of overseas mining and qualified in Britain as a colliery manager. Returning to New Zealand in 1954, he spent six months working at the Pukemiro Mine, at the coal face, to complete his local practical mining experience for his New Zealand certificate as a first class mine manager.

He became mining engineer at the Mangapehi State Coal Mine at Benneydale and managed the mine from 1955 until 1958, when he transferred to Ohai.

Mr Partel managed the Morley Mine until 1963, when he became manager of Dobson State Mine near Greymouth. He left the West Coast in 1967 when promoted to Assistant District Manager at Huntly, holding that position for nine months until taking his present appointment.

As Planning and Development Engineer he has often been called on to lecture on the development of coal mining in New Zealand, especially as relating to the expansion of the Huntly coalfield. The proposed $27 million development of coal mining in the Waikato, in which mechanised coal mining will largely replace obsolete hand extraction methods, has been largely his responsibility.

Mr Partel represents the New Zealand Institute of Mining on the Coal Research Association. His hobbies are boating and water ski-ing, with an appreciation of motoring and high fidelity recorded music. He lives in the Wellington suburb of Johnsonville, and has three daughters.



OBITUARY

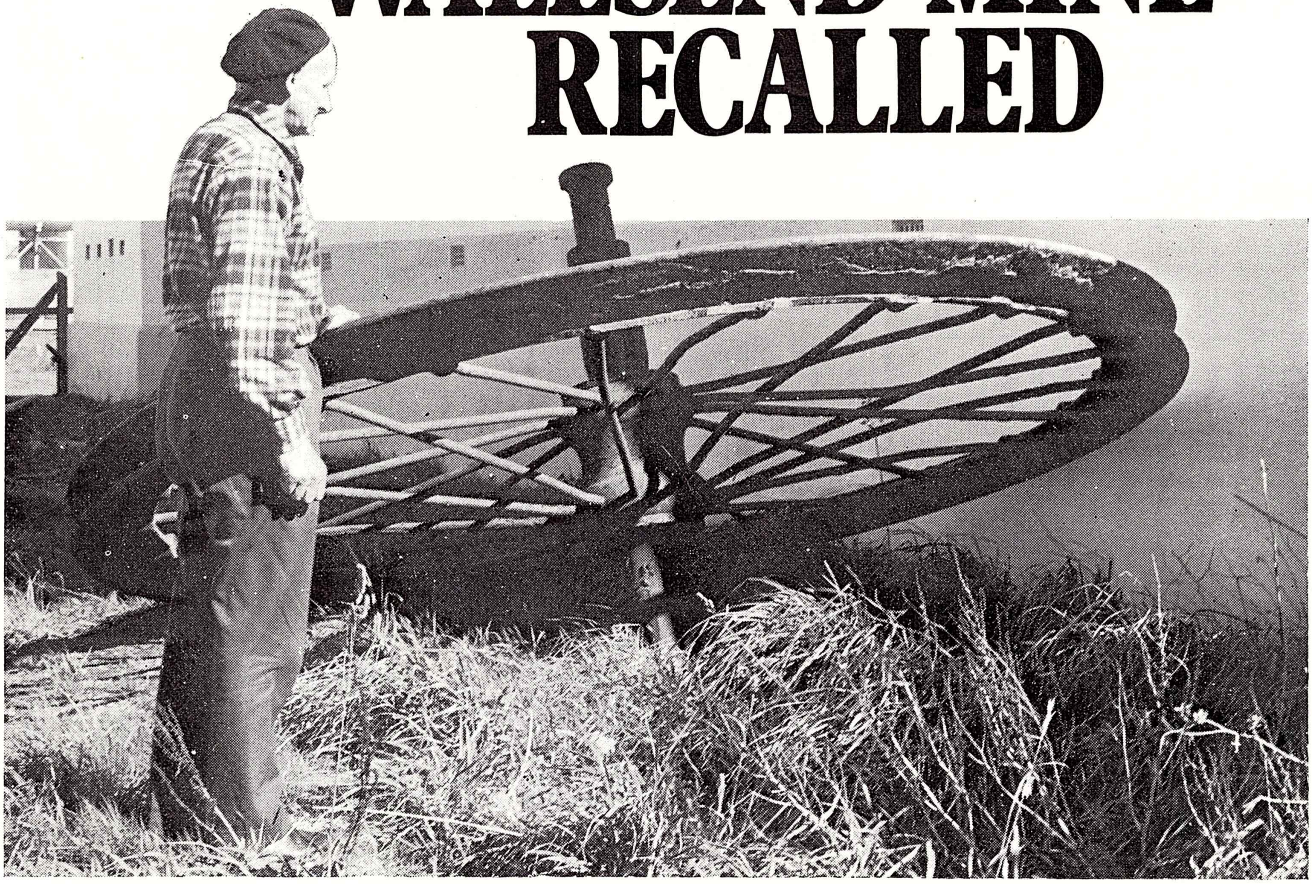
Mr D. Rush

An active member of the Coal Merchants' Federation and leading Palmerston North coal merchant, Mr D. Rush, died on September 2.

He and his brother had operated the wholesale and retail business in Palmerston North which their father had founded 50 or 60 years ago. Their efforts maintained the business as the largest firm of coal merchants in the Manawatu.

The late Mr Rush was keenly interested in the activities of the Coal Merchants' Federation and its work to promote coal use. A former vice-president of the federation, he was a member of the council at the time of his death.

WALLSEND MINE RECALLED



The wheel from the Wallsend Mine, recovered and awaiting restoration in the yard of the Grey County Council at Greymouth, before being mounted to commemorate the Wallsend Mine.

Resurrected from the long grass beside the Greymouth-Reefton highway at Dobson, a large steel wheel from the Wallsend mine will eventually be mounted on the mine site to commemorate the mine.

Wallsend Mine was opened in 1886. After a change of ownership it closed in 1890, and then was dewatered and reopened by Brunner Collieries Ltd in 1928. In 1943 it was taken over by State Coal and finally closed on February 19, 1960, having produced 1,723,601 tons of coal.

Mr J. Fowler of Christchurch, chief engineer for Skellerup Industries Ltd, was the engineer for Wallsend when it was reopened. He has written about the mine for "Coal" — "Maybe some of my old mates may read these recollections and recall some past memories."

"I was employed by Brunner Collieries Ltd on the engineering staff and began at the Wallsend Colliery in February, 1928. I left in March 1940 — a period of 12 years.

"Those were difficult years for the coal industry and unemployment was rife during the early 1930s. It was a rare event for the mine to work a full week, more often it was two or three working days. The mine workers, their wives and families knew extreme hardship.

"Some information about staff in early 1928 may be of interest.

Mine Manager — George Smith

Underviewer — Big Dave McIvor

Deputies — Harry Bell, Geo. Dixon

Electrician — Keith Girling and his old model T Ford, held together with fencing wire, and later Dick Le Cren.

Carpenters — Arthur Gutberlet, Tom Morgan complete with tall yarns, which made his estimated age about 150 years. His brown liquid capacity was 15 full schooners and this after band practice. Kevin Creagh and Darkie Gutberlet.

Winding Engine Drivers — Little Billy Hughes, Bill Meagher and Jack Rowlands.

Fireman — Watty Gutberlet.

"There were many other good mates such as Watty Crosgrove, Tom Copperfield, Bill Chetwin, Les and Frank Baxter, Archie Howie, Frank Tinning, Frank and Paddy Creagh, Bill Burn and many others.

Blacksmiths — Jimmy Robertson who broke out occasionally and was very sorry for himself for several days after. Sykes Armstrong who sharpened the picks and hand drills (one time stage coach driver on the Otira-Springfield Section).

Engineer — Sid Mayhew formerly of Waiuta Gold Mine. He began at Wallsend about August, 1928.

Contractors — For the coal bins and poppet heads, Harry Brailsford and Dick Marley and crew.

Check Weighman — Angus McLagan, later Minister of Mines.

Company Weighman — Les Walton.

Steam

The steam plant consisted of two large Babcock and Wilcox water tube boilers. The winding engine was a pair of 18in diameter by 48in cylinders with 10ft diameter rope drum mounted on the crank shaft.

"Auxiliary winding engine was a pair of 10in diameter by 24in cylinders geared to two winding drums about 5ft in diameter sited at the return air shaft. There were Ingersoll Rand dual compound air compressors (600 cubic feet at 180 rpm) and also a Bury compound of 600 cubic feet at 150 rpm. This was a tandem arrangement of the cylinders.

"It was susceptible to crank bearing failure, particularly when the fireman had a 'snooze-off' during the wee small hours. There were numerous small steam engines driving the bins conveyor, coal screens, railway wagon loading conveyor, etc. Beautiful engines, well made, trouble free and silent running.

"The main haulage winches on No. 2 and No. 1 dips were air driven, and these had previously been ships' winches. There were also six other smaller winches and eight water pumps all air driven, the largest of these being a Parker Duplex 8in by 6in by 12in. Electricity supply was at 11,000 volts into our sub-station. The ventilation motor was a 160 hp No Lag Motor driving a double inlet Sirocco Fan 100in circumference — at that time, the largest capacity fan in New Zealand (belt driven).

Pump

"A Rees Ro Turbo, an eight stage main pump of 36,000 gallons per hour capacity was driven by a 192 hp 1450 rpm motor. This pump discharged the water through a 12in diameter flanged cast iron pipe up the return air shaft, a height of 685 feet including suction pipe. The cable taking power down the haulage shaft was an armoured lead-covered three core type 750ft long and weighed about five tons. Initially, coal came from the No. 2 section but when dewatered we found the end of the dip had been driven up to the rock face of the fault. However, to the left of the dip about 20 chains down there were no previous workings.

"All the headings off the main level were sealed off with concrete stopping and steel pipes taken into the main return airway to relieve gas pressure behind those stoppings. Expansion work was concentrated on No. 1 dip to the left of the main shaft from a previously worked level. This level was stopped off just beyond the dip. A main electric haulage was placed at the top of this dip driven by a 75 hp motor. This dip soon ran into the fault and a level was driven to the left to what was thought to be virgin coal. However, we broke through into old workings which were not shown on the mine plans. Work was then concentrated on No. 3 dip to the right past No. 2 dip, this was driven to the fault line then an 8 chain stone drive having a gradient of 1 foot in 3.3ft. This operation was successful and the coal seam was relocated.

"Before the stone drive was started a bore was put down to prove the existence of the coal. This had a 4in diameter pipe down through the top shingle bed and when the coal was reached the diameter of the bore hole was 2½in. Now the stone drive was divided down the centre with a 6in by 1in tongue and grooved wooden wall to provide ventilation until a second stone drive was made for the return air. At the foot of the eight chain stone drive we had a duplex air-driven double-acting water pump. This just coped with the water nicely.

Flood

"About two weeks after the coal was reached at the side of a small heading being driven, the water from the test bore broke in. This rapidly flooded the workings. I had an urgent telephone request for a wooden plug which I sent down but the pressure was so great it would not be placed in the bore hole. I then quickly made a new tapered wooden plug with a pipe passing lengthwise through it with a cock at the large end of the plug. Taking a two ton bottle jack, down I went, the pump was still plugging away under about five feet of water. There was about 12in to 15in between the water and roof so I quickly stripped down to overalls and with the assistance of Dave McIvor cut a seating for the bottle jack. A bit of luck and we had the plug in the bore hole, pushed it home with the bottle jack, turned off the cock and the deluge was over for the time being.

"All this and no wet time — this was one of the times my hat nearly floated, at that time a necessary qualification.

"To get back to more details of the plant, the first B and W boiler came from the Otira tunnel, the second dual steam drum boiler was ex Kings Wharf, Auckland. The Rees pump normal running time was for eight hours per day, sometimes much longer.

"There were two shafts 14ft in diameter 700ft deep joined by a drive at this level, this allowed the water from the winding shaft to flow across into the return air shaft where it flowed into a holding level. The pump suction was into the return air shaft sump. The coal seam was at the 660ft level. There were four narrow seams of coal further up the shafts. The railway line was moved over towards the river to allow the mine to be reopened, this was 50ft from the shafts. This action was necessary to allow space for the railway siding, boiler house, coal bins workshops and bathhouse, etc.

"The concrete collar at the top of the winding shaft had the year 1928 moulded in it, this also supported the poppet heads 70ft in height.

"Oregon bracing 16in square ran from the top of the poppet heads towards the winding engine to take the forces generated by the winding engine raising the loaded cages. Each cage took two skips of coal, weight of coal between 25 to 30 cwt. Twelve men to a cage going on or coming off shift.

Ropes

"The top brace for unloading the cages was 40ft above ground level. The winding ropes were 1⅛in in diameter, breaking strain 120 tons. Rope life, three years — ropes turned end for end after 18 months, that is the rope end on the winding drum changed to the shackled end for the cages. Ropes cut by hacksaw every three months and reshackled after cutting out about 12ft of rope, then dressed with hot crater compound. Cage chains annealed every 12 months. No safety grippers were in use, we had a dispensation from the Mines Department so extra care had to be taken with all gear connected with winding equipment.

"The cages were located by four cast steel guides bolted to the cages. These ran on railway lines bolted to wooden buntings placed on the centre line of the shaft dividing the shaft into two sections, guide rails were on both sides of the bunting timber. These were about 8ft apart top to bottom of the shaft and were set into each side of the shaft and wedged. The two rope winding wheels on the poppet head 70ft up were about 12ft in diameter, having a deep-throated rim of cast steel to take the winding rope mild steel spokes and a cast steel boss, through which passed a mild steel shaft to which the wheel boss was keyed. The shafts were carried in bronze bearings lubricated each week by means of flow feeding adjustable grease cups. To lubricate the bearings it was necessary to climb up one of the back stays, this had 4in by 2in cleats nailed to it.

"I climbed to the poppet head top once a week for several years and walked around on the 12in by 12in timbers. There were no hand rails, and on occasions I walked along the wheel shaft passed through the wheel spokes to get to the other bearings. Of course one did not climb up there to work unless the engine driver had been advised not to use the winding engine. The only safety device installed was a rope detaching hook. This functioned when an overwind took place. The winding rope passed through a 1¼in mild steel plate having a 6in diameter hole machined in the centre. This was bolted on top of substantial wooden beams about 10ft higher up the poppet head than the normal top winding position.

Overwind

"When an overwind occurred, the hook release passed into the steel plate forcing two projecting arms inwards shearing a 5/16in copper rivet. This held the moving parts in alignment, and at the same time two lugs came out on the top side of the plate holding the cage in suspension. As the lugs came out the shackle pin was released leaving the end of the winding rope free. Substantial chains also came in under the cage as an additional safety feature to prevent the cage falling down the shaft. The object in having a detaching hook was to prevent the winding engine pulling over the poppet heads in the event of an overwind.

"Several overwinds did take place while I was at Wallsend mine. These were caused by the engine driver neglecting to move the reversing lever into the correct position after lifting the cage of the chairs at the 40ft level above ground where the loaded coal skips came out of the cages.

"Cage chains detaching hook, winding ropes, shackles, winding engine and all associated winding gear were inspected every morning before the miners went down the shaft. Two inspection certificates had to be made out and signed certifying all the above equipment was in good working order.

"While the mine was being dewatered by using bailing tanks in 1927, after being flooded for 40 years, the steam throttle valve on the small winding engine borrowed from the Mines Department did jam open. There was no detaching hook fitted and only a small poppet head over the shaft so the engine of course overwound, the winding engine disintegrated, and the engine driver was only a split second ahead of flying parts as he came through the door.

Where the Wallsend Mine wheel was recovered, at the mine site beside the Grey River at Dobson. Mr A. Auld (right), then superintendent of the mines rescue station, shows the site to Mr W. J. McDonald, then assistant manager of Strongman Mine.

Wheels

"The permanent poppet head and winding wheels were erected in 1928. They arrived from Christchurch where they were made, by rail. Because of the diameter (about 12ft), a special UB wagon was used with sections cut out of the truck deck into which the rims of the wheels fitted. This was necessary to allow sufficient clearance for the rope wheels to pass through the railway tunnels, When dewatering was in progress by bailing, the gas compressed in the old rise workings expanded as the water head was reduced. For a time the water level in the shaft remained static and of course the wise ones reckoned the Grey River had broken through the mine works. Bailing continued and the compressed gas suddenly belched up the shaft, the water level immediately dropping dramatically.

"It was considered dangerous for railway engines to pass the shaft while gas was being discharged and on several occasions trains were held until the gas dispersed. Most of the timber in the two shafts was in excellent condition although it had been under water for 40 years.

"Safety lamps were used initially when working underground — I can still recall occasions when they failed because of being overturned and we were left in complete blackness.

"My first job was erecting the twin steam drum B and W boiler. This took several months' work and included hand dressing all the inspection caps and seatings on the headers, metal to metal water tight joints, 288 in all. Wallsend was a very gassy mine but no mishaps took place while I was there."

* * *

TEST DRILLING IN NORTHLAND

High priority is to be given to test drilling of Northland coalfields to determine their potential as a possible fuel supply for generating electricity, the Minister of Science, Mr C. J. Moyle, says. The test programme will involve drilling five prospecting holes.

The survey was linked to the proposal for a coal-fired power station at Marsden, Mr Moyle said, but the Geological Survey of the Department of Scientific and Industrial Research had reported that the probability of finding commercially exploitable deposits of coal in Northland was low.

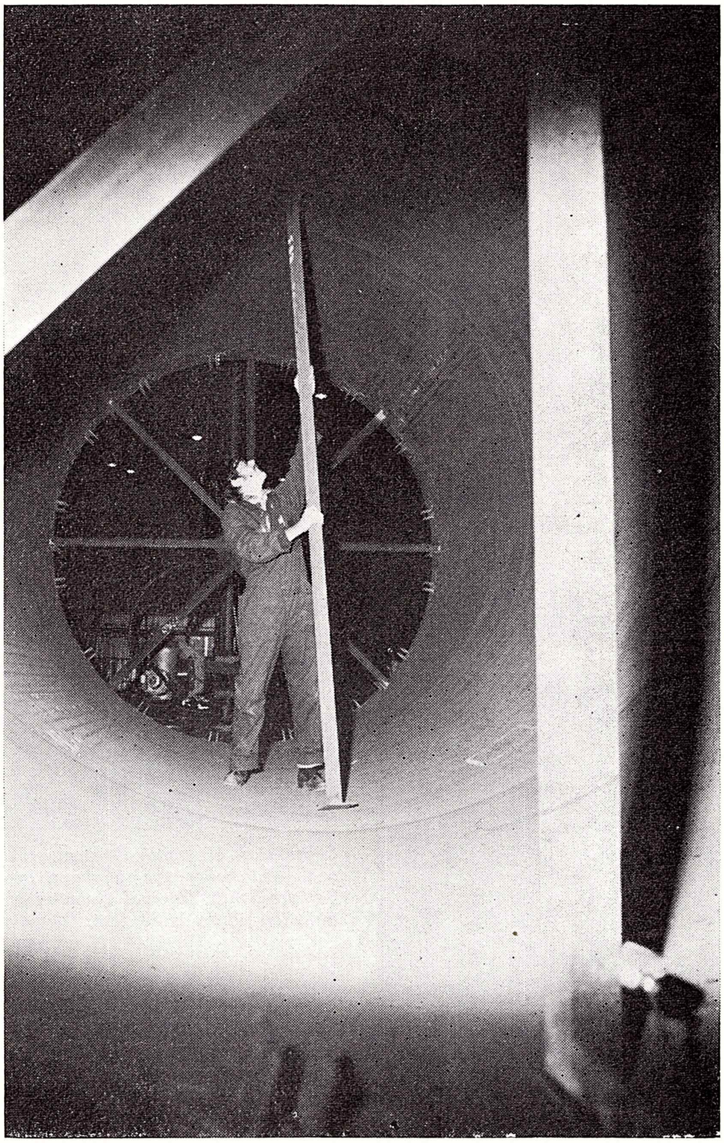
The known coalfields were abandoned when all the economically available coal was worked out or when the mines were flooded by limitless water from overlying limestone caverns and water moving along fault zones from one set of workings to another.

There was no certainty that any coal existed outside the known coalfields, but no method other than drilling would give an answer.

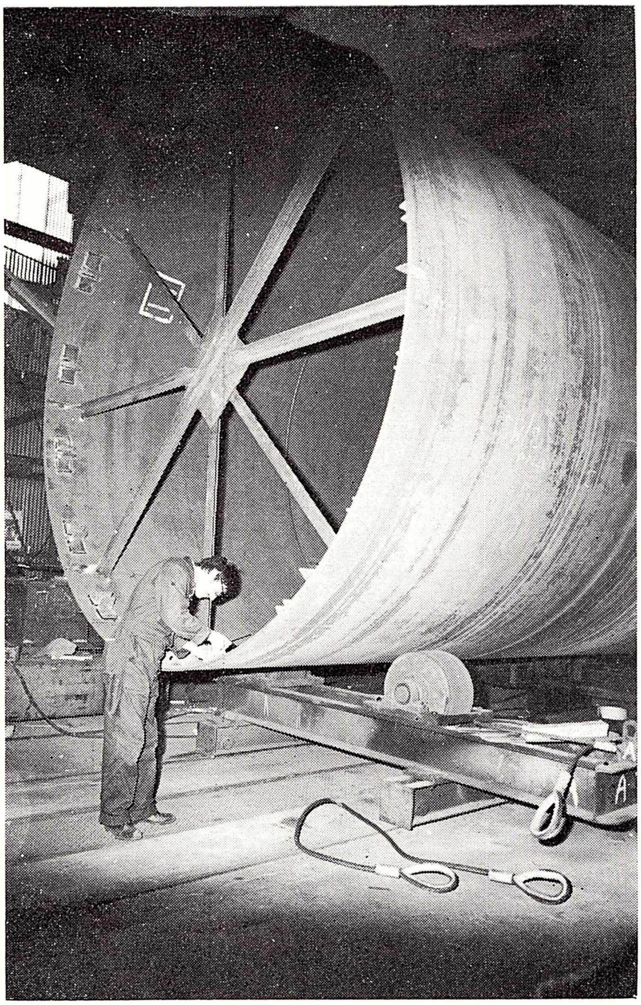
The areas to be test drilled lie among the Kiripaka, Kamo and Hikurangi coalfields, at depths ranging from 200 and 540 feet.

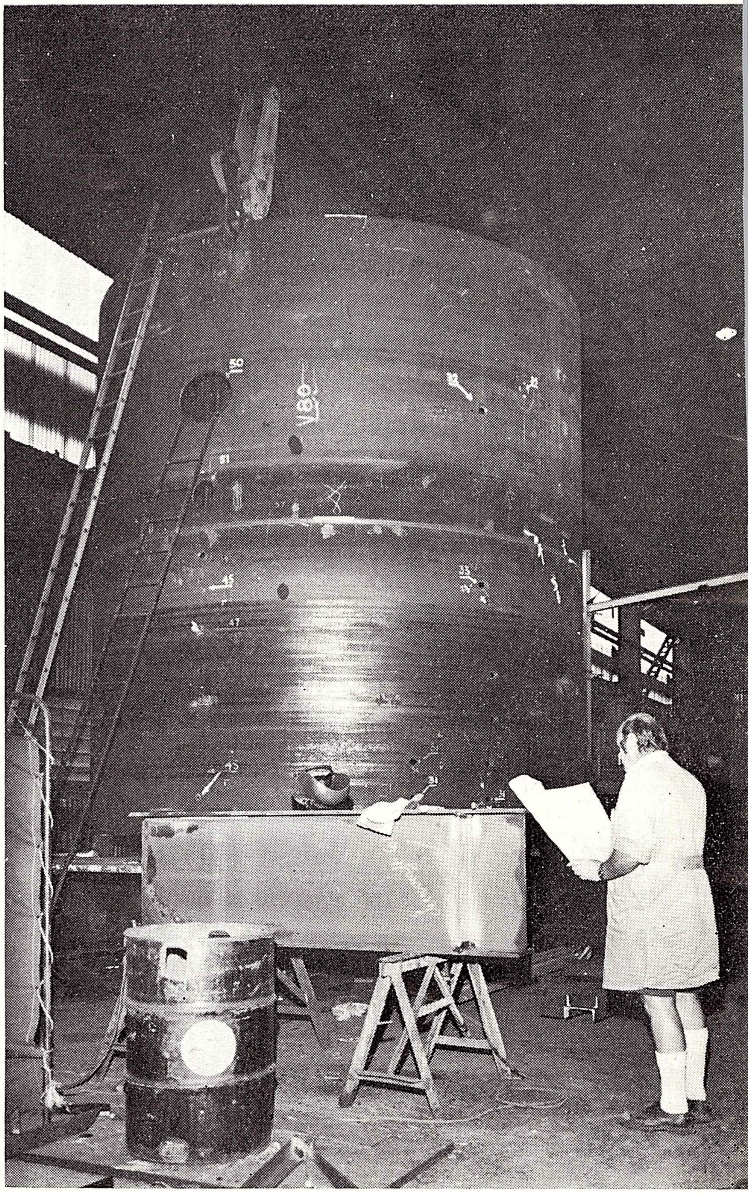
The survey would take four to six months to complete, Mr Moyle said.

THE LARGEST

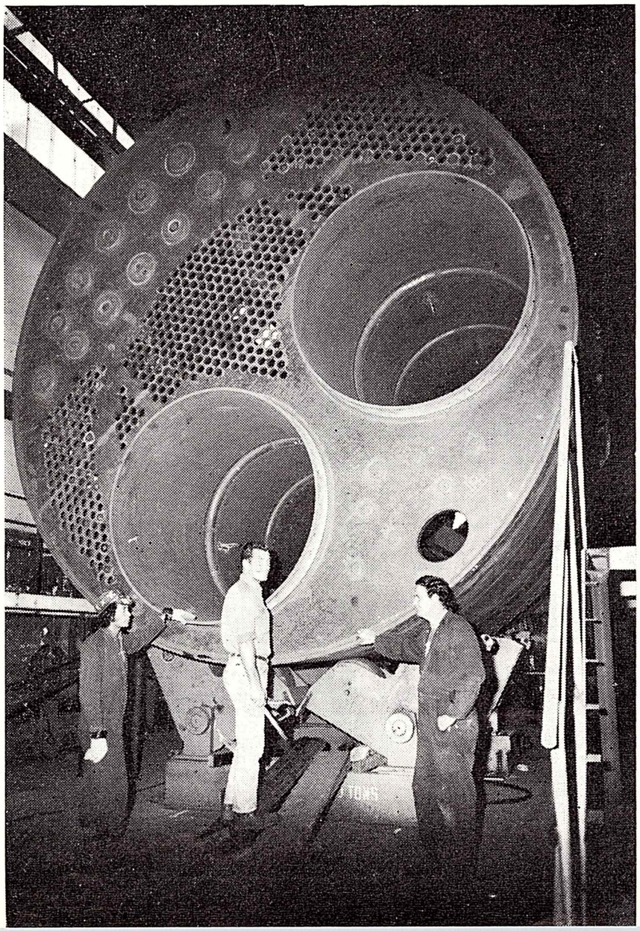


SOUTHERN HEMISPHERE'S LARGEST BOILER FOR COAL FIRING AT SOUTHLAND FREEZING WORKS





Containing 60 tons of steel, the Alliance Freezing Works new coal-fired boiler taking shape in the Otahuhu works of Fletcher Bernard-Smith. Internal diameter of the shell is 16 feet, and length over the plates is 17 feet. Diameter of the furnace flues is 5 feet 8½ inches.



Believed to be the largest shell boiler ever built in the Southern Hemisphere, a 60-ton Babcock and Wilcox boiler has been made in New Zealand for the Alliance Freezing Company at Invercargill.

Ordered long before there was any hint of increases in oil prices, the boiler was designed from its inception to be fired on Ohai coal.

Up to 40 tons of coal a day will be used to generate 36,000lb of steam per hour when the new boiler is installed on site.

Total heating surface is 5726 square feet. The two furnace flues are 5 feet 8½ inches in diameter, and the internal diameter of the shell is 16 feet. Length over tube plates is 17 feet.

(continued on page 24)

SOUTHERN HEMISPHERE'S LARGEST BOILER

(continued from page 24)

The boiler is a three pass wetback, and is designed to have a working pressure of 150lb per square inch.

Two Oldbury Babcock chain grate stokers will feed the Ohai coal into the furnace.

TRANSPORT

Transport of the boiler, from Fletcher Bernard-Smith's works in Auckland, where it was built, to Invercargill provided problems right at the beginning for Babcock and Wilcox (New Zealand) Limited, the contractors.

The works of Fletcher Bernard-Smith at Otahuhu have heavy lift cranes, so that handling the boiler during building caused few problems. The difficulty arose in transporting it to the docks at Auckland, where it could await an overseas ship with lifting gear adequate to unload the boiler at Bluff.

Because of the boiler's weight, the road transport over the 12 miles to the Auckland docks was limited to routes which excluded bridges over creeks and railways. Because of its height when loaded it could not travel on routes where there were trolley bus wires.

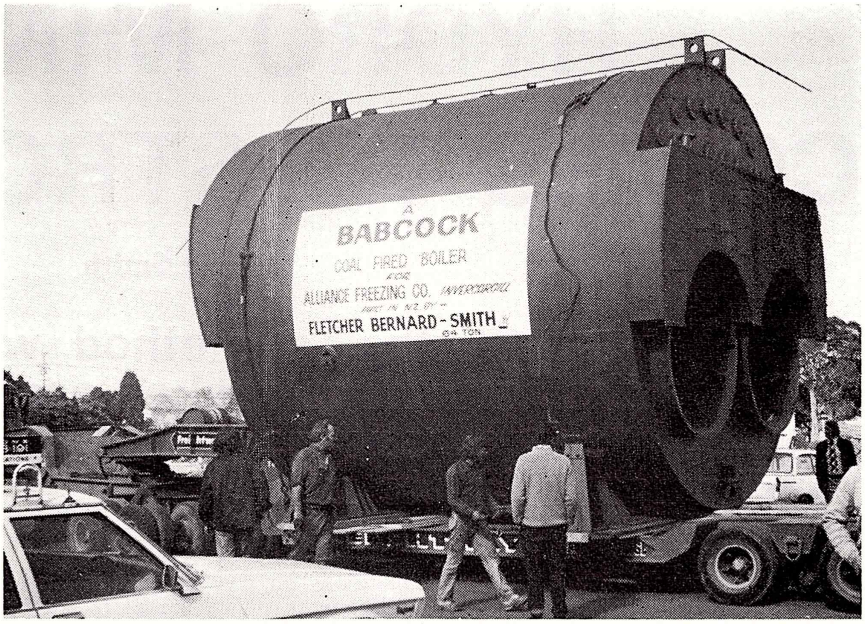
For these reasons it was impossible to haul the boiler into Auckland by road.

HIKINUI

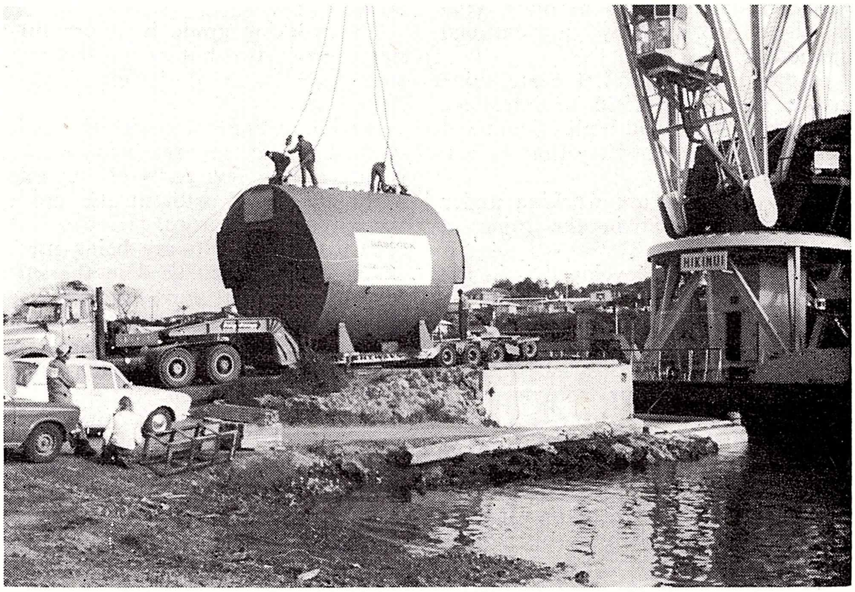
Babcock staff tackled this by asking the Auckland Harbour Board for help. At first the request was considered most unusual and not an acceptable risk, but after several conferences the board agreed to send its self-powered floating crane, Hikinui, out of the harbour perimeter, across the bar at the mouth of the Tamaki River, up the river for 16 kilometres to an old concrete landing ramp by the Panmure/Howick road bridge.

The weather — wind and tides — had to be right. North-east winds would not have been welcome and low tides would have made the crossing of the bar possible only for the hour at high tide. A change in conditions keeping the Hikinui bottled up in the river estuary would have involved expensive compensation to the harbour board.

For several reasons the delivery date from the works was delayed but the final day coincided with a period of exceptionally high tides and southerly winds. The movement of the Hikinui into new waters, the transfer from road transport to the deck of the Hikinui and the voyage back to Auckland docks went without a hitch while Babcock staff in Auckland breathed a sigh of relief at successfully completing stage one of the transport plan.

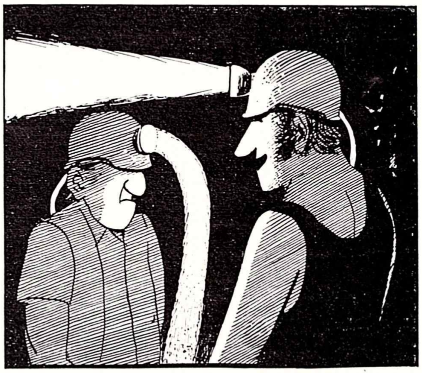


Heavy lift cranes at Fletcher Bernard-Smith's works meant there were few problems in handling the boiler from its construction site to road transporter as it began its journey.



The Auckland Harbour Board's floating crane Hikinui could easily manage the lift from road transporter to its deck for transport to the Auckland docks where the boiler would await a ship for the voyage to Bluff.

After the boiler has been shipped to Bluff it will have a further 32 kilometres road journey to the freezing works before finally being installed and set to work.



"Trouble with you Rupert, is that your battery's weak."

HYDRO MINING COMES TO STRONGMAN

Murray Smith

Hydro mining, a method which produces twice the amount of coal as conventional methods, has been successfully introduced into the Strongman State mine.

Although hydro was introduced into the mine only in November last year, and the section is just beginning to be developed, the miners are already producing twice as much coal as those working by conventional methods.

Strongman is the first State mine in the Grey coal field to introduce hydro operations and both miners and management are hoping that it will continue.

Only two pairs are working under the hydro method in the mine at present.

The area being developed is in the east heading section and it would be impossible to work economically by using boxes and miners shovelling.

A dam has been constructed inside the mine, the water coming from natural seepage.

A pump then forces it up to the face where coal and water flow down after a shot has been fired. The coal goes down to a board dam where it is held up until there is enough to release into the mine bins. It is then dropped into boxes and hauled out of the mine, untouched by human hands.

The water is channelled into a settling pond where the fine coal, or silt, drops to the bottom and the water carries on back to the pump to be recirculated.

The silt is dragged out of the settling pond by a scraper loader and taken out of the mine. At present no use has been found for the 150 cwt of silt left by the operation each day. It would make ideal fuel for firing boilers but it has to be left for several months to dry before being used.

The section is being developed by the pillar method and the two pairs of miners are producing about 500 tons a fortnight at present compared with 280 tons from two pairs in ideal conditions on conventional methods.

When the pillars are extracted by the hydro method the present rate of production will double.

Steep

The working grade is at present a steep one in two but as the section is developed more it is expected to flatten out.

An interesting point with the hydro method is that the area being worked is one of the few parts of the mine to be developed without the use of conventional pit props.

Instead roof bolts are being used.

These have been used in the mine for 14 years but have usually been supplemented by the props. The bolts are iron bars eight feet long, inserted into the roof and sides of the tunnel after holes are drilled.

The bolts are screwed in for the final few feet and this opens a shell on the end which holds the walls together.

It has been found that props are washed away from the bottom with the continual action of the flowing water and they are not used for this reason.

Although twice the number of shots are fired in hydro mining, because the men advance twice as fast, the safety factor in regard to explosions is higher than in other areas of the mine.

Dust is the ingredient that increases the risk of an explosion but because there is so much water around with hydro the dust is almost non existent.

In fact the safety factor for the men is generally much higher than with miners shovelling into boxes.

Accidents from runaway boxes are ruled out because there are none in the vicinity. The only danger to the men is if the roof falls in or if they are swept off their feet in the "river" of coal. However, this would be a rare occurence because the miners are thoroughly aware of the inherent dangers.

Polythene piping also makes the job more pleasant for the men.

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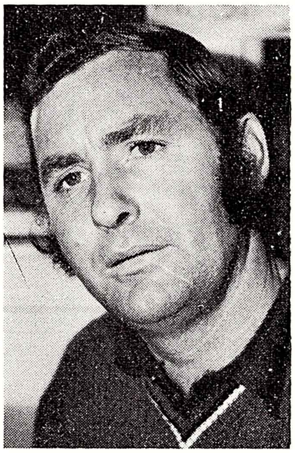
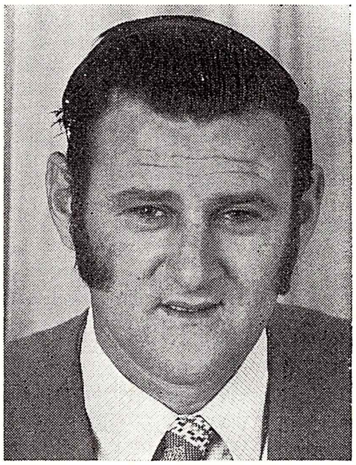


Mr. H. Bell
manager of Strongman



Mr. B. Crestani
secretary, Strongman union

CO$_2$

HOW TO BEAT THE FUEL SHORTAGE

PART III OF III

In Parts I and II we saw how the measurement of the CO$_2$ content of a flue gas gave a value for the amount of excess air being fired with the fuel. We also saw why there is a large increase in heat lost up the chimney if excess air is not controlled to the correct figure (usually 50 per cent for coal).

In this part we end the series by looking briefly at some of the equipment available for measuring the CO$_2$ content of flue gas.

We can generally divide the equipment into two:

(1) Absorption types.
(2) Thermal conductivity.

ABSORPTION TYPES

In some respects, carbon dioxide differs appreciably from oxygen, nitrogen and the other flue gas constituents. For example, it is very rapidly and easily absorbed by a caustic solution — potash or soda — and in this way can be removed from a sample of the flue gas. The reduction in the flue gas volume so obtained is therefore a quantitive measurement of the CO$_2$ content of the flue gas.

The "Fyrite"

The main part of the "Fyrite" device is a container shaped like a dumb-bell, Fig. I, containing a caustic potash solution in the lower bulb.

Flue gas is pumped in through the special valve in the top bulb which allows the fresh sample to displace the old sample. When all the old sample has been replaced by new waste gas, the valve is closed and the gas and caustic solution mixed by inverting the tester several times. The CO$_2$ is removed from the flue gas and the volume is therefore reduced. This raises the slack diaphragm in the bottom bulb and the level of liquid in the centre tube and the reduction in volume can be read off on the scale as percentage CO$_2$.

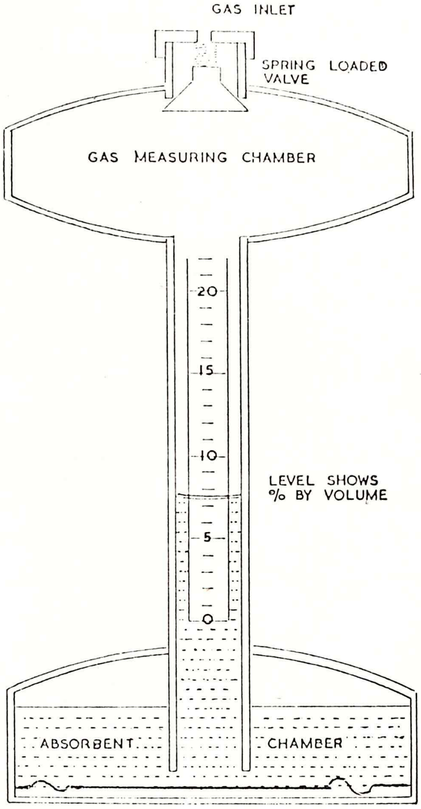
The "Fyrite" is a useful tester for spot checks but is limited to this use. If continuous measurement and recording of the results are required. then a mechanised version such as the "Mono" CO$_2$ Recorder is needed.

The "Mono" CO$_2$ Recorder

While the basic functions of the "Mono" Recorder are exactly the same as those of the "Fyrite", they have been mechanised so that the sampling, measurement, absorption and re-measurement are automatically cycled at approximately two-minute intervals.

A Mono Recorder is shown in Fig. II, and, diagramatically, in Fig. III. The heart of this machine is the electric motor "E" driving the mercury pump (12). When the plunger (13) rises, a fresh sample is drawn in at the intake (1) through the non-return valve (2) and into the volumeter (4). The plunger (13) now slowly descends and gas is forced from the volumeter (4) through the non-return valve (3) and moisture trap (20) along the tube (6) through three-way valve (22) along the tube (23) into the absorption bottle (7) where the CO$_2$ is removed by the caustic solution. The remaining gas travels up the tube (9) into the measuring bell (10) and the push rod (19) operates the pen mechanism (11) marking the chart. The piston now rises releasing the valve (5) which allows the spent gas to escape and the cycle is repeated.

In the model shown a refinement is added in the three-way valve (22) and the furnace (27) which allows measuring of the CO and H$_2$ in the waste gas on each alternate stroke.



1. "Fyrite" CO$_2$ tester.

This recorder thus gives a continuous record of the CO$_2$ and CO + H$_2$ contents of the flue gas. It will normally operate satisfactorily, given a reasonable amount of maintenance such as replenishing the caustic solution, emptying and cleaning filter and moisture traps, periodic calibration check, and, of course, daily servicing of chart and pen mechanism.

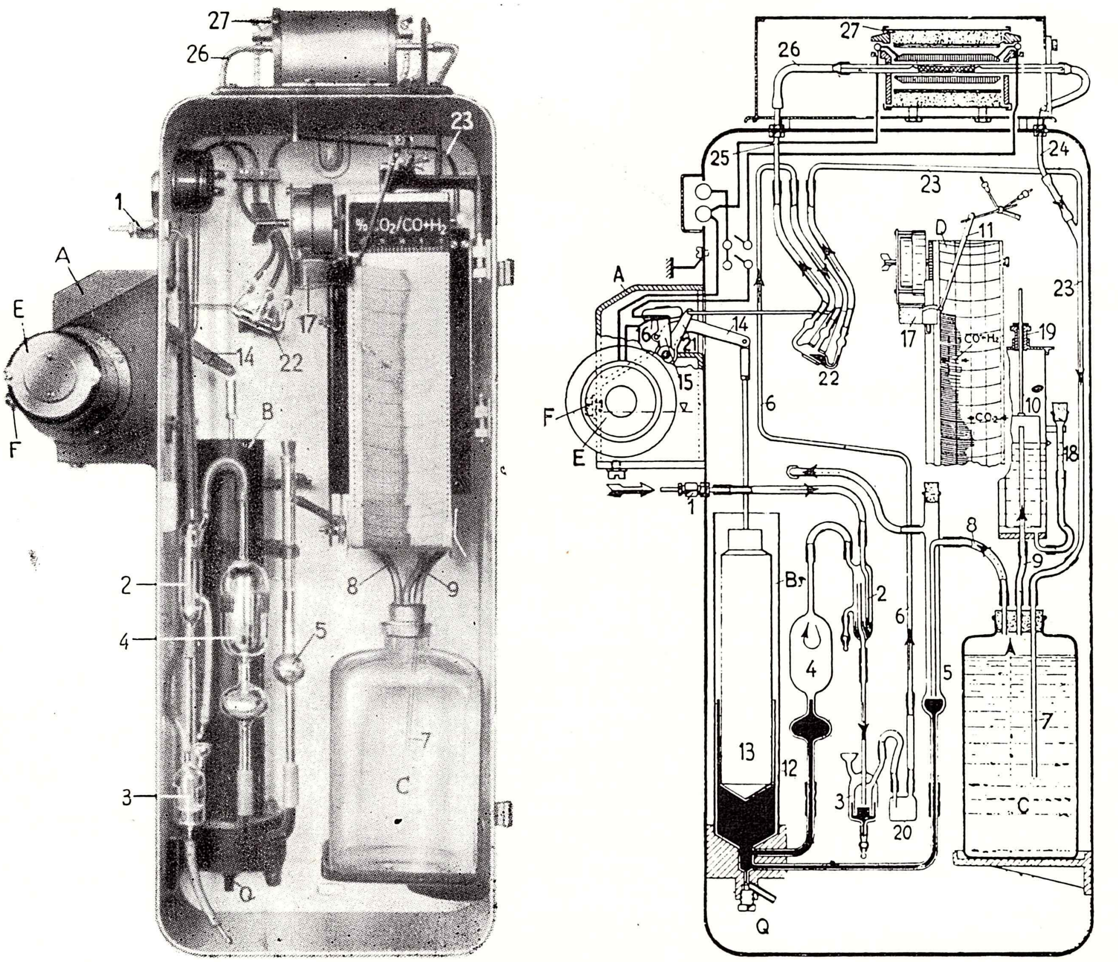
THERMAL CONDUCTIVITY TYPES

The rate at which CO$_2$ will transfer heat away from a heated filament is considerably less than the corresponding rates for oxygen, nitrogen and the other constituents of flue gas. This difference is used in several continuous indicating and recording instruments for the recording of CO$_2$ content, such as the "Cambridge" CO$_2$ meter, the "Smith's Loss Meter" and several others.

The Cambridge CO$_2$ Recorder

In the Cambridge instrument, shown diagrammatically in Fig. IV, the sample is analysed in a small unit (1) which can be near the sampling point. The output, which is electrical, can be transmitted to an indicator (2) and/or recorder (3) also shown in Fig. V, along a simple electric cable.

In the analyser, two identical filaments are heated by an electric current. One of these filaments is surrounded by the flue gas, the other by air.



II and III. Mono CO_2 tester.

The heat is transferred away from the filament more slowly by the flue gas containing CO_2 than by the air and therefore this filament stays hotter than the other, making its electrical resistance higher than the other.

The two filaments are incorporated into a Wheatstone Bridge circuit. This measures the difference in their electrical resistance in the form of a voltage imbalance which can be transferred to the indicator or recorder. The amount of the imbalance can be calibrated against standard gas mixtures to indicate the CO_2 content directly.

Accidents from runaway boxes are ruled out because there are none in the vicinity. The only danger to the men is if the roof falls in or if they are swept off their feet in the "river" of coal. However, this would be a rare occurrence because the miners are thoroughly aware of the inherent dangers.

Polythene piping also makes the job more pleasant for the men.

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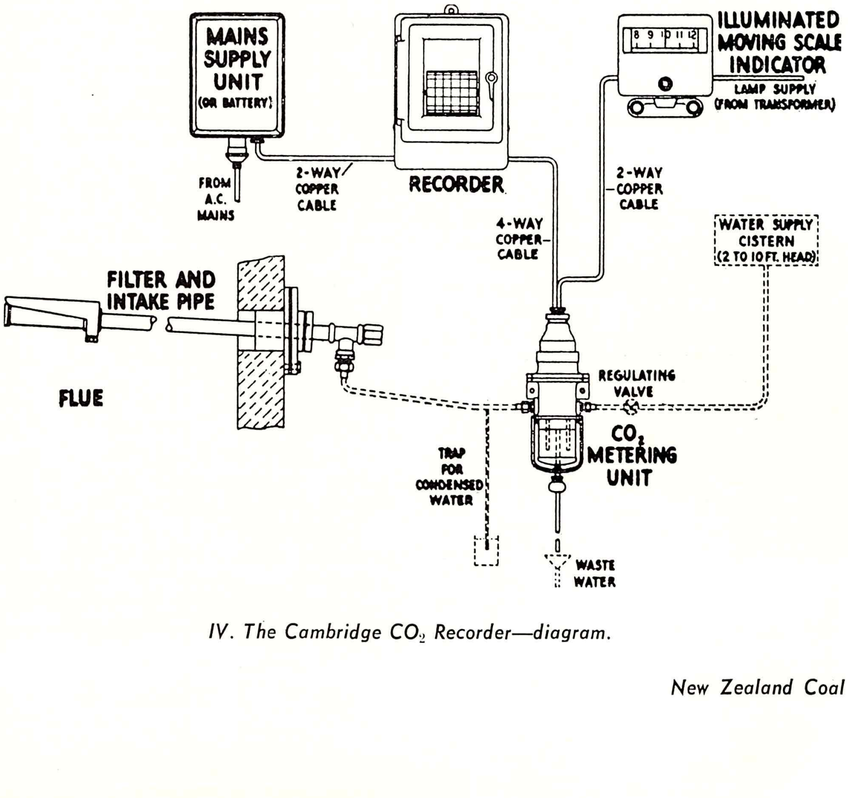
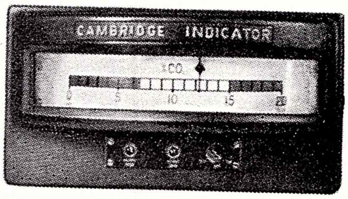


IV. The Cambridge CO_2 Recorder—diagram.

CO2 – HOW TO BEAT THE FUEL SHORTAGE –

(concluded from page 28)

V. The Cambridge CO_2 Recorder.



HYDRO MINING

(continued from page 26)

Agreement

A new agreement covering rates and conditions for the system has been in the process of being drawn up and it is expected that the negotiations will be mutually satisfactory.

Less equipment is needed also to develop a section with harnessed water.

There is no need for truckers — the water does all the work.

The men can also get equipment closer to the face thereby saving valuable time.

The manager of Strongman, Mr Harry Bell, is enthusiastic about the method.

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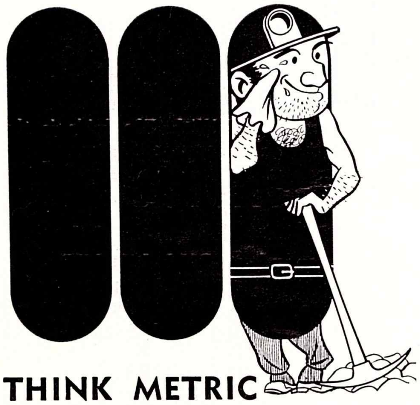


THINK METRIC

"It is one of the safest, most economic and fastest ways of mining," he said.

"Auxiliary fans as well as standard brattice work provide more ventilation and of course, there is less dust."

However, improvements are being planned.

One improvement that could be included in the present system is a stone trap.. This could be provided by dropping the fluming a stage before the mine bins. This would make the water boil and the heavier stones would drop to the bottom while the coal flowed on. This makes for a cleaner product and almost eliminates the need for stone pickers.

Secretary of the union Mr Bruno Crestani, who is one of the miners at present working in the hydro section, said the men hoped the method goes ahead because it made the job less arduous and eliminated the occupational hazard of a bad back.

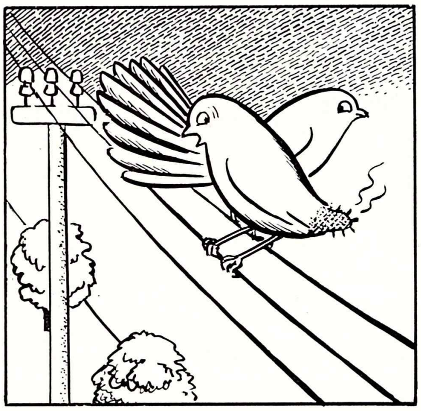
However, the conventional methods are unlikely ever to disappear from the mine.

Hydro mining is not suitable for every area as a grade is needed and also water from natural seepage. These conditions, of course, do not apply in all areas of the mine.

But in the future it is hoped that hydro mining and the scraper loader methods will be developed more fully.

"All we want to do is to produce coal more cheaply and these methods help us to do this," said Mr Bell.

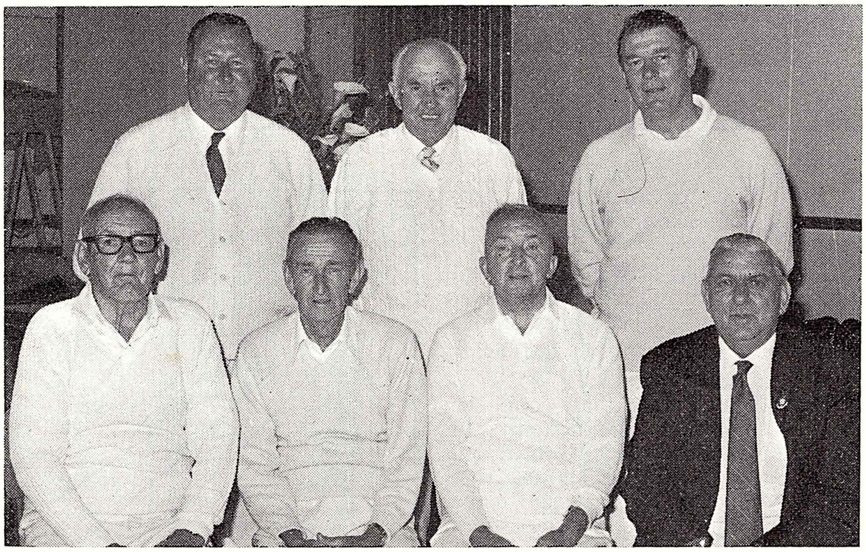
"With these methods coal can be produced more cheaply. It all adds up to a better future for coal in New Zealand."



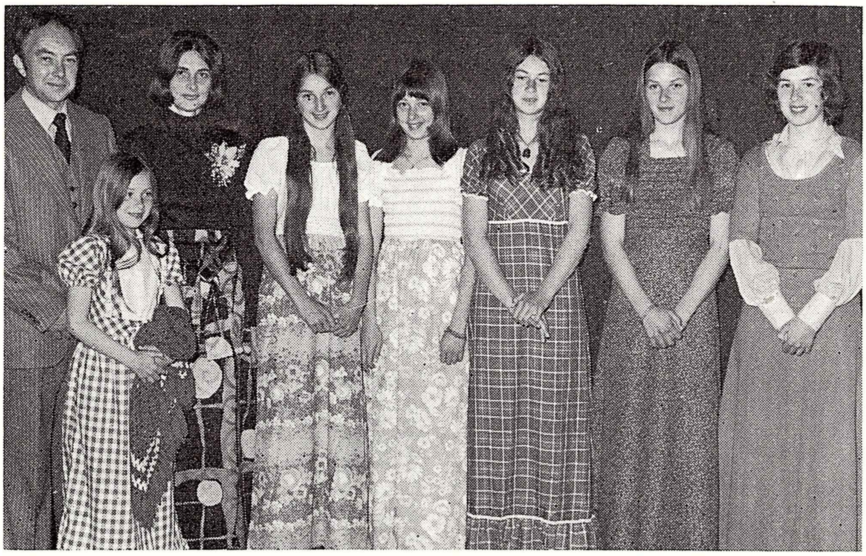
"It's those smokeless domestic coal appliances.. You can't see if there's a fire in the chimney!"

"No, you can't have wet time for this."

DISTRICT NEWS



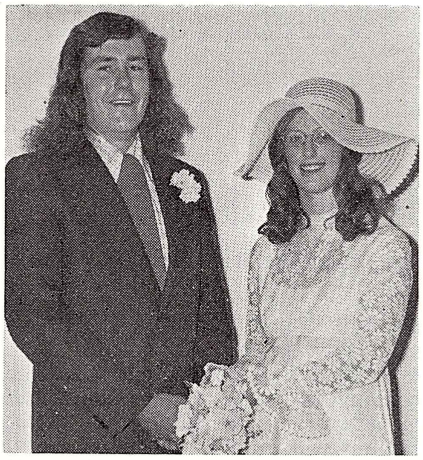
Millerton's bowling club, after nearly going into recession has revived well and six past presidents at the season's opening on November 3. From left to right, they are (standing): Messrs R. Dowell (present president), F. Fox and E. Davies. Sitting: Messrs D. Harker, W. Milligan, C. Orman and J. Douglas. The green was begun in 1924 and finished in 1929, and has always been an attraction for visiting bowlers.



Dr and Mrs Cox and their six daughters. From left, Genevieve (8), Charlotte (12), Helena (13), Katherine (15), Elizabeth (16), and Bridget (17).

D. F. Robertson photo.

Lieutenant and Mrs Michael Moore. Mrs Moore is the former Sandra Crackett.



Mr and Mrs Barry O'Dea. Mrs O'Dea is the former Norma Shearer.

D. F. Robertson photo.

Mr and Mrs Evan Griffith. The bride is the former Miss Lorraine Shearer.

D. F. Robertson photo.

– BULLER –

Correspondent: BILL MILLER

The weather in the Buller over the period has been rather a mixed bag — some very good, some very bad, and some in between.

The road through Granity, approximately one mile, has been brought up to highway standard and with the sealing and marking it's completed and looking very good.

School tours are as popular as ever and up to date this year they haven't slackened off, averaging three a week in September and coming from places like Waimate, Wellington, Dannevirke, Tangimoana (near Palmerston North), Christchurch, Upper Hutt, Havelock North, and many more, some schools actually coming back two and three times.

Weddings: Lorraine Shearer and Evan Griffith.

Sandra Crackett and Michael Moore.

Norma Shearer and Barry O'Dea.

Births: To Bill and Kay Douglas — a son.

It is with regret that I have to record the passing of some of our oldest and respected members of the community. Ted Connew, Waimangaroa; Mrs Milligan, Granity; Snowy Jack, Waimangaroa; Mrs Anderson, Seddonville; Mrs Paki, Ngakawau; Jimmie Hill, Waimangaroa.

Farewell: The Mining Community met recently to farewell Dr and Mrs R. A. Cox and family, of Granity, in appreciation of their service to the community.

The function was held in the Lyric Theatre at Granity and country residents from Waimangaroa to Seddonville were present to help farewell a doctor who had served them for 16 years.

Dr Cox told a near capacity house that he had arrived in the district 16 years ago, intending to stay one year. But he liked the people and the climate so much he stayed much longer.

The doctor was given a camphor chest and a painting of a West Coast scene by well-known artist, Aston Greathead of Kaikoura. His wife received a greenstone set.

There were many tributes to the Cox family and, in making the presentation, Cr W. J. Mumm referred to Dr Cox's sterling work in the mining townships and to Mrs Cox's great contribution to the community.

Entertainment was provided by the Waimangaroa Silver Band and local artists, many of whom Dr Cox had brought into the world.

Granity Constable Les Maloney was MC for the evening, which concluded with a supper contributed to by a large number of women in the country areas.

— OHAI —

Miners and their families at Ohai can expect the most up-to-date conveyance if any of them have the misfortune to go to hospital through accident or illness.

A new Dodge ambulance has been delivered to the Nightcaps, Ohai and District Ambulance Association. Built of fibreglass and laminex by Reevely Ellis and Collingwood, of Auckland, the new vehicle offers a considerable contrast in style and fittings to the Austin Princess ambulance, built in England and delivered in 1957.

The new Dodge ambulance has two patented stretchers of aluminium alloy with large castors, so no trolley is needed. On one side four leather "back rests" are fitted. These can be used when seated patients are carried.

Large glass sliding doors between driver and patients give good lighting and vision inside the vehicle. A panel shelf holds a large oxygen cylinder, and oxygen can be piped to central positions on each side where flow-meters are installed. There is a smaller cylinder for emergency oxygen outside the ambulance and a cylinder of Entonox, a pain-killing gas, is also mounted convenient for use.

Lighting can be subdued or full. A large heater services both the cab and patients' compartment. Non-slip lino, pushbutton signals and special suspension through moving the shock absorbers for a more comfortable ride are among the new ambulance's features. A hazard switch operates all signal flasher lights together for safety during road accident work.

Radio telephone links the driver with Kew Hospital (Invercargill) or other ambulances similarly fitted.

The Dodge interior fittings are standardised with those of Kew Hospital fittings so that a complete stretcher, blankets or sheets can be changed over when the accident or emergency ward is reached.

The new Dodge represents a further step in ambulance services for the Nightcaps-Ohai area that began 47 years ago. A Buick ambulance was bought in 1927 for $1100 from money raised at fairs, stalls, direct levies on miners' wages, a grant from the Coal Owners' Association, and one of $500 from the Mines Department. At the same time a maternity home was built at Nightcaps and later handed over to the Southland Hospital Board.

The Buick gave faithful service for 20 years and then a Ford V8 was offered by Macauley Motors at a cost of $2600 in 1947. A levy on miners' wages, of one penny in the pound, raised $2800 in two years — including a contribution from the Mines Department of $500. This vehicle is still in use. Another 10 years, and the ambulance committee was offered an Austin Princess for $6000, the Mines Department granting $1000.

The newest vehicle of the fleet which has served the district is the Dodge, which has been financed as follows: Ohai Medical Association, $3000; Mines Department, $2000; Coal Mining Districts' Welfare and Research Council, $1000; Golden Kiwi, $1000; Wallace County Council, $100; and the Underground Officials' Institute, $250. A canvass of additional members in the outlying districts, mainly farmers, returned $500 from the Lions Club and the rest of the sum was provided by the ambulance committee's funds invested in the Southland Hospital Board and Southland Building Society.

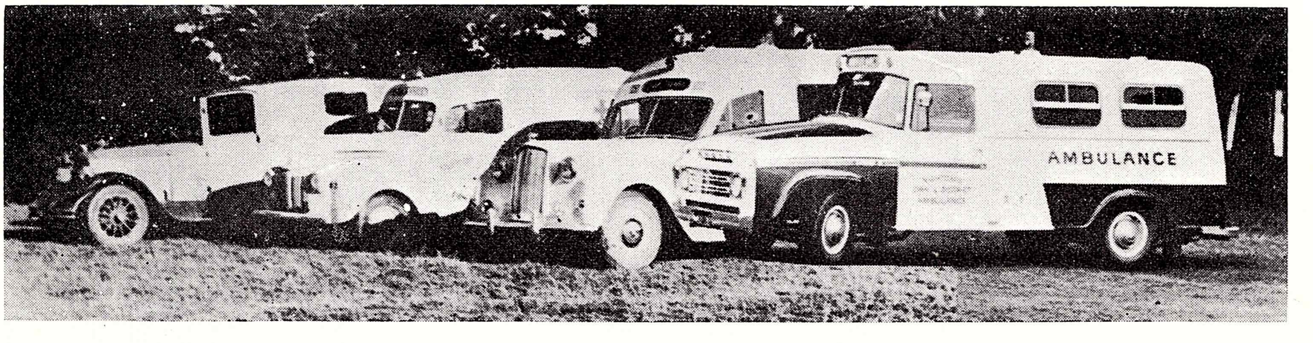
Dr K. R. Fernando, of Nightcaps, is responsible for calling the ambulance but if a mine accident occurs a senior official "alerts" the ambulance and calls it if the medical practitioner is not immediately available. A team of first-aid men and women staffs the ambulance.

Membership of the service extends to a 16-kilometre radius from Ohai. A similar ambulance is stationed at Otautau, 26 kilometres away, and each ambulance is able to provide a back-up service for the other.

The committee responsible for the ambulance service is: Messrs H. Gibson (chairman), W. Elliott (secretary since 1947), J. Lowrie, D. Kynaston, T. Tiplady, J. Duncan, I. Talbot, G. Bennie, F. Phair, D. Tanner and D. Grindlay. No mention of Ohai's ambulance committee would be complete without referring to the late Mr J. Thompson, secretary for the first 20 years.

— HUNTLY —

After 35 years in the coal mines office at Huntly, Miss Henrietta Hodgson will retire in January 1975.



Ohai ambulances (left to right): The 1927 Buick, 1947 Ford V8, 1957 Austin Princess and the 1974 Dodge.

"I love the work," she says. "I thought I wouldn't have liked it but I became more involved.

"You couldn't meet nicer people," she says of the workers in the coal industry.

It was August 1940 when Miss Hodgson began working for the Mines Department. The office was then a detached room behind the Huntly courthouse and Mr R. Schoen, later Chief Inspector, was the district coal mine inspector.

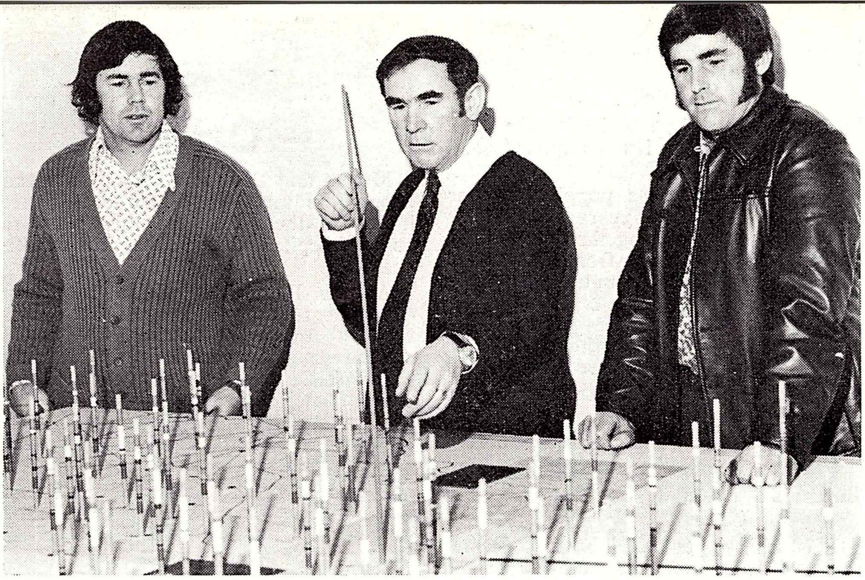
Work increased when the State took over the private mines. "There was just myself and two inspectors," she says.

Mr Percy Outhwaite, later Under-Secretary of Mines, was Superintendent of Waikato mines at Huntly early in Miss Hodgson's career.

She remembers when the mines used to work slack time over the Christmas period, when shortages of rail wagons reduced working hours.

Now: "Coal is so much in demand," says Miss Hodgson.

* * *



Where managing coal mines is a family affair: Mr T. M. Brazil (centre), Chief Inspector of Coal Mines, and his two sons Kevin (left) and William, all three holding first class mine manager's certificates. Kevin is in charge of exploratory drilling at Huntly and is showing the model of the coal seam at Huntly. The pegs represent boreholes, the coloured bands about each showing different rock strata and the coal seam. William Brazil is Assistant Manager, Strongman Mine.

Only one other family in New Zealand is thought to have equalled or surpassed the Brazil family record of coal mine managers. On the West Coast, Mr George Smith was manager for the Westport Coal Co. and his son, George was also employed as a manager by the same firm. Two other sons were mine managers, Joe Smith at Huntly and Alby Smith at Greymouth. The Smiths were managing coal mines in the period before World War II.

* * *

Britain has a new first lady of coal mining: Miss Pat Verey, crowned Coal Queen of Britain in September. Pat is the 20-year-old student teacher, daughter of a South Derbyshire coal mine deputy. Turid Sangolt, 27, National Coal Board staff college worker, was runner-up. Marion Rice, 18, third place-getter, is the daughter of a Northumberland faceworker.

Turid Sangolt *Pat Verey* *Marion Rice*

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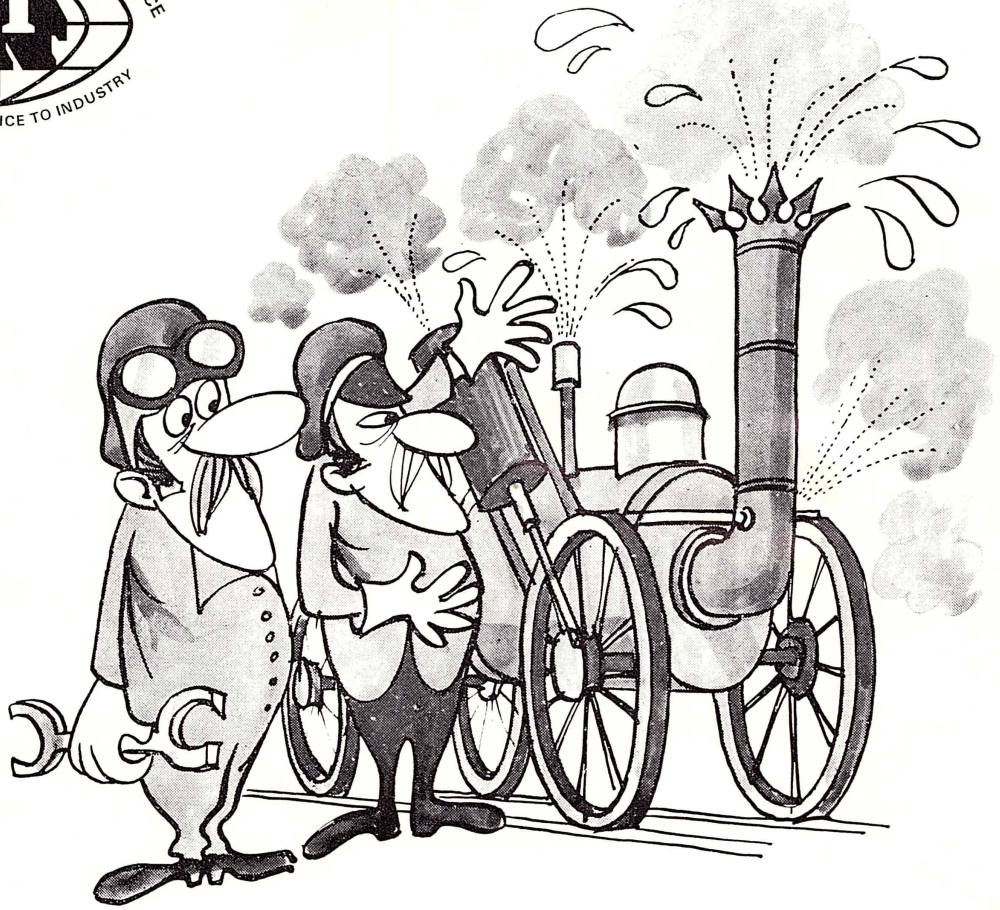

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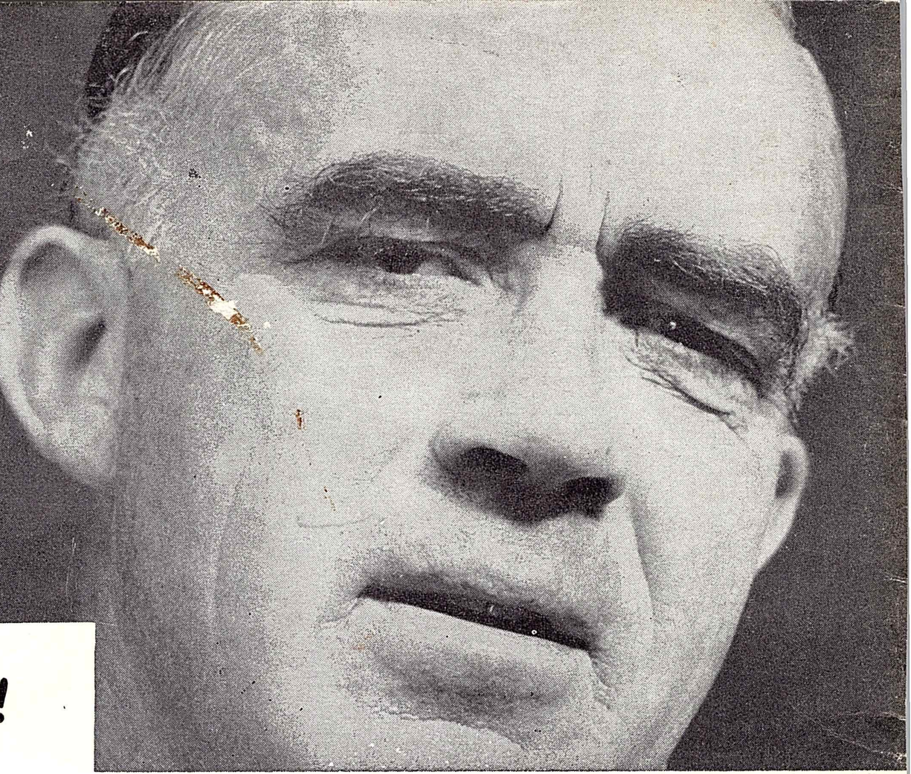

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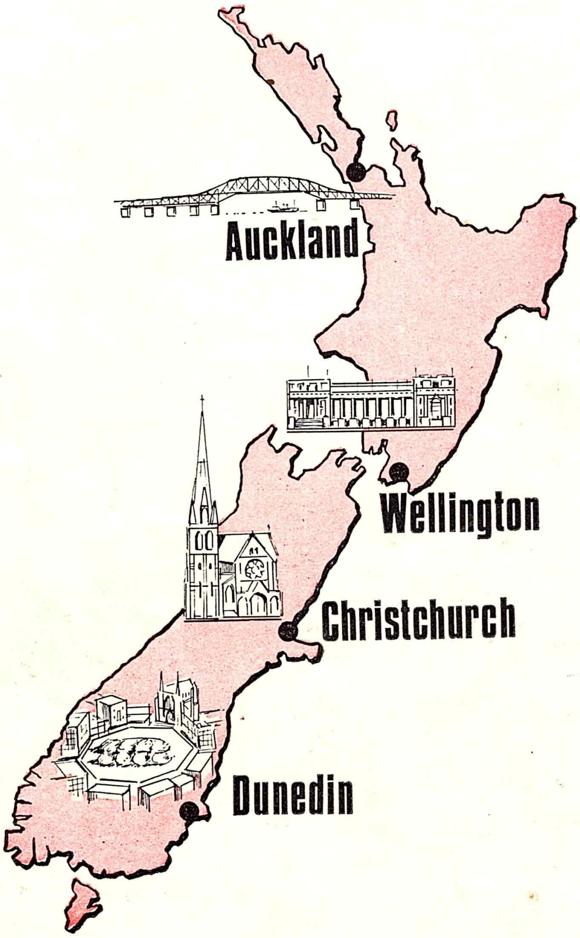

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